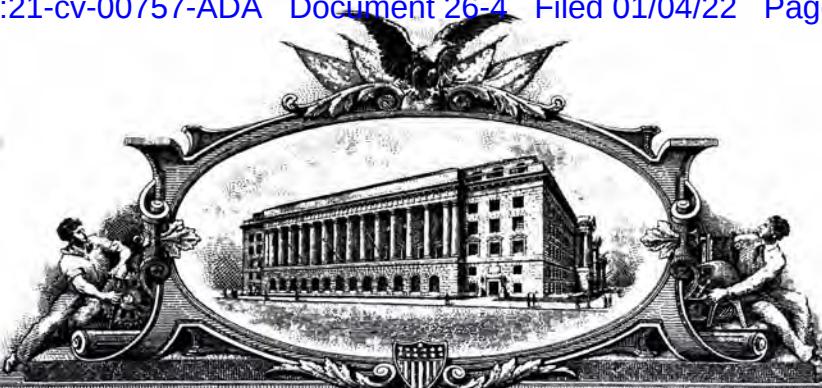


Exhibit 3



IW 8100914

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office**

July 06, 2021

**THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE
RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS
OF:**

APPLICATION NUMBER: 09/604,961

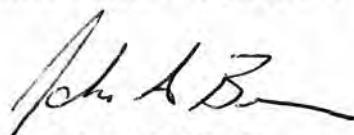
FILING DATE: June 28, 2000

PATENT NUMBER: 6,683,858

ISSUE DATE: January 27, 2004

**By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office**




JOHN A BURSON
Certifying Officer

PT0000012

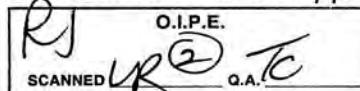
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Case 62

370	263	Subclass
Class		ISSUE CLASSIFICATION

PATENT NUMBER
6683858

U.S. UTILITY Patent Application



PATENT DATE

APPLICATION NO. 09/604961	CONT/PRIOR	CLASS 370	SUBCLASS 260	ART UNIT 2664	EXAMINER <i>B. Pham</i> <i>Tuan, phone</i>
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LICANTS
Frank Chu -
Virgil Dobjanschi
Corey Gates
Katherine Kwan

Hybrid server architecture for mixing and non-mixing client conferencing

11

PTO-2040
12/99

ISSUING CLASSIFICATION

WARNING:

The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.

Form PTO-436A
(Rev. 6/99)

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Cust Box Nbr: RF047850606

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Box Type: 1.2
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 WASHINGTON, D.C. 20231
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Bib Data Sheet

SERIAL NUMBER 09/604,961	FILING DATE 06/28/2000 RULE -	CLASS 370	GROUP ART UNIT 2731 2664	ATTORNEY DOCKET NO. 1719.0340000
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APPLICANTS

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 Virgil Patrick Dobjanschi, Fremont, CA ;
 Corey Gates, Belmont, CA ;
 Katherine W. Kwan, San Jose, CA ;
 Daniel W. Wright, San Jose, CA ;

** CONTINUING DATA ***** none bp

** FOREIGN APPLICATIONS ***** none bp

IF REQUIRED, FOREIGN FILING LICENSE

GRANTED ** 09/19/2000

Foreign Priority claimed 35 USC 119 (a-d) conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance bp	STATE OR COUNTRY CA	SHEETS DRAWING 4	TOTAL CLAIMS 13	INDEPENDENT CLAIMS 3
Verified and Acknowledged	Examiner's Signature Initials				

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Sterne Kessler Goldstein & Fox PLLC
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 Washington ,DC 20005-3934

TITLE

Hybrid server architecture for mixing and non-mixing client conferencing

FILING FEE RECEIVED 840	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit
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A. PTO/SB/05 (2/98)
for use through 09/30/2000. OMB 0651-0032
U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR § 1.53(b))

Attorney Docket No. 1719.0340000

First Inventor or Application Identifier Frank J. Chu

Title Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing

Express Mail Label No.

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

JC712 6/28/00 S-PTO

1. * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original, and a duplicate for fee processing)
2. Specification [Total Pages 19]
(preferred arrangement set forth below)
 - Descriptive title of the Invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
6. Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 a. Computer Readable Copy
 b. Paper Copy (identical to computer copy)
 c. Statement verifying identity of above copies

3. Drawing(s) (35 U.S.C. 113) [Total Sheets 4 1]

4. Oath or Declaration [Total Pages 1]

- a. Newly executed (original or copy)
 b. Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed)
 [Note Box 5 below]

i. **DELETION OF INVENTOR(S)**

Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR §§ 1.63(d)(2) and 1.33(b).

5. Incorporation By Reference (useable if Box 4b is checked)

The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

ACCOMPANYING APPLICATION PARTS

8. Assignment Papers (cover sheet & document(s))
 9. 37 CFR 3.73(b) Statement Power of Attorney (when there is an assignee)
 10. English Translation Document (if applicable)
 11. Information Disclosure Statement (IDS)/PTO-1449 Copies of IDS Citations
 12. Preliminary Amendment
 13. Return Receipt Postcard (MPEP 503)
 (Should be specifically itemized)
 14. *Small Entity Statement(s) Statement filed in prior application, Status still proper and desired
 15. Certified Copy of Priority Document(s) (if foreign priority is claimed)
 16. Other: 37 C.F.R. § 1.136(a)(3) Authorization
 Other:

*NOTE FOR ITEMS 1 & 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

Continuation Divisional Continuation-in-Part (CIP) of prior application No: /

Prior application information: Examiner _____ Group/Art Unit: _____

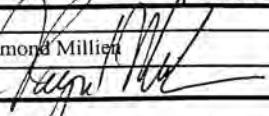
18. CORRESPONDENCE ADDRESS

Customer Number or Bar Code Label

(Insert Customer No. or Attach bar code label here)

or Correspondence address below

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CITY	Washington	STATE	DC	ZIP CODE	20005-3934
COUNTRY	USA	TELEPHONE	(202) 371-2600	FAX	(202) 371-2540

NAME (Print/Type)	Raymond Milliet	Registration No. (Attorney/Agent)	43,806
SIGNATURE		Date	6/28/00

Burden Hour Statement: this form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

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ANDREA J. KAMAGE**
NANCY J. LEITH**
TARJA H. NAUKKARINEN**

*BAR OTHER THAN D.C.
**REGISTERED PATENT AGENTS

June 28, 2000

WRITER'S DIRECT NUMBER:
(202) 789-5506

INTERNET ADDRESS:
RMILLIEN@SKGF.COM

Commissioner for Patents
Washington, D.C. 20231

Box Patent Application

Re: U.S. Non-Provisional Utility Patent Application under 37 C.F.R. § 1.53(b)
Appl. No. To Be Assigned; Filed: June 28, 2000

For: Hybrid Server Architecture for Mixing And Non-Mixing Client Conferencing

Inventors: Frank J. Chu, Virgil Patrick Dobjanschi, Corey Gates, Katherine W. Kwan, and Daniel W. Wright

Our Ref: 1719.0340000

Sir:

The following documents are forwarded herewith for appropriate action by the U.S. Patent and Trademark Office:

1. USPTO Utility Patent Application Transmittal Form PTO/SB/05;
 2. U.S. Utility Patent Application entitled:

Hybrid Server Architecture for Mixing And Non-Mixing Client Conferencing

and naming as inventors:

**Frank J. Chu, Virgil Patrick Dobjanschi ,
Corey Gates, Katherine W. Kwan and Daniel W. Wright**

PT0000016

Commissioner for Patents

June 28, 2000

Page 2

the application comprising:

a. specification containing:

- i. 13 pages of description prior to the claims;
- ii. 5 pages of claims (13 claims);
- iii. a one (1) page abstract;

b. 4 sheets of drawings: (Figures 1-4);

3. 37 C.F.R. § 1.136(a)(3) Authorization to Treat a Reply As Incorporating An Extension of Time (in duplicate); and
4. Two (2) return postcards.

It is respectfully requested that, of the two attached postcards, one be stamped with the filing date of these documents and returned to our courier, and the other, prepaid postcard, be stamped with the filing date and unofficial application number and returned as soon as possible.

This patent application is being submitted under 37 C.F.R. § 1.53(b) without Declaration and without filing fee.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

RVM\ejb
Enclosures

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SKGF Rec. 5/12/00 mac

PT0000017

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

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DUPLICATE

12 U.S.P.T.O.
09/604961
06/28/00



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*BAR OTHER THAN D.C.

**REGISTERED PATENT AGENTS

June 28, 2000

WRITER'S DIRECT NUMBER:

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Commissioner for Patents
Washington, D.C. 20231

Box Patent Application

Re: U.S. Non-Provisional Utility Patent Application under 37 C.F.R. § 1.53(b)
Appl. No. To Be Assigned; Filed: June 28, 2000

For: **Hybrid Server Architecture for Mixing And Non-Mixing Client
Conferencing**

Inventors: Frank J. Chu, Virgil Patrick Dobjanschi, Corey Gates,
Katherine W. Kwan, and Daniel W. Wright

Our Ref: 1719.0340000

Sir:

The following documents are forwarded herewith for appropriate action by the U.S.
Patent and Trademark Office:

1. USPTO Utility Patent Application Transmittal Form PTO/SB/05;
2. U.S. Utility Patent Application entitled:

**Hybrid Server Architecture for Mixing And Non-Mixing Client
Conferencing**

and naming as inventors:

**Frank J. Chu, Virgil Patrick Dobjanschi ,
Corey Gates, Katherine W. Kwan and Daniel W. Wright**

PT0000018

Commissioner for Patents
June 28, 2000
Page 2

the application comprising:

- a. specification containing:
 - i. 13 pages of description prior to the claims;
 - ii. 5 pages of claims (13 claims);
 - iii. a one (1) page abstract;
 - b. 4 sheets of drawings: (Figures 1-4);
3. 37 C.F.R. § 1.136(a)(3) Authorization to Treat a Reply As Incorporating An Extension of Time (in duplicate); and
 4. Two (2) return postcards.

It is respectfully requested that, of the two attached postcards, one be stamped with the filing date of these documents and returned to our courier, and the other, prepaid postcard, be stamped with the filing date and unofficial application number and returned as soon as possible.

This patent application is being submitted under 37 C.F.R. § 1.53(b) without Declaration and without filing fee.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

RVM:jb
Enclosures

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SKGF Rec. 5/12/00 mac

PT0000019



STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

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**REGISTERED PATENT AGENTS

December 19, 2000

WRITER'S DIRECT NUMBER:

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INTERNET ADDRESS:

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Commissioner for Patents
Washington, D.C. 20231

Box Missing Parts

Re: U.S. Patent Application
Appl. No. 09/604,961; Filed: June 28, 2000
For: Hybrid Server Architecture for Mixing and Non-Mixing Client
Conferencing
Inventors: Chu et al.
Our Ref: 1719.0340000

Sir:

In reply to the "Notice to File Missing Parts of Application--Filing Date Granted," dated September 19, 2000, Applicants submit the following documents for appropriate action by the U.S. Patent and Trademark Office:

1. PTO Fee Transmittal Form PTO/SB/17 (in duplicate);
2. Petition for Extension of Time under 37 C.F.R. § 1.136 (in duplicate);
3. Copy of the Notice to File Missing Parts;
4. Original Declaration, executed by the inventors;

PT0000020

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Commissioner for Patents
December 19, 2000
Page 2

5. Our Check No. 29844 for \$950.00 to cover:

\$710.00 Filing Fee for Patent Application (37 C.F.R. § 1.16)
\$130.00 Surcharge for late filing of Declaration (37 C.F.R. § 1.16)
\$110.00 For extension of time fees under 37 C.F.R. § 1.136; and

6. Return postcard.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. If extensions of time under 37 C.F.R. § 1.136 other than those otherwise provided for herewith are required to prevent abandonment of the present patent application, then such extensions of time are hereby petitioned, and any fees therefor are hereby authorized to be charged to our Deposit Account No. 19-0036. A duplicate copy of this letter is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

0340000.pt2

PT0000021

HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING

Inventors: Frank J. Chu
5 Virgil Patrick Dobjanschi
Corey Gates
Katherine W. Kwan
Daniel W. Wright

Background of the Invention

Field of the Invention

The present invention relates generally to computer-based telephony networks and more particularly to servers that manage telephony conferencing.

Related Art

In today's technological environment, there exists many ways for several people who are in multiple geographic locations to communicate with one another simultaneously. One such way is audio conferencing. Audio conferencing applications serve both the needs of business users (e.g., national sales force meeting) and leisure users (e.g., audio chat room participants) who are geographically distributed.

Traditional audio conferencing involved a central conferencing server which hosted an audio conference. Participants would use their telephones and dial in to the conferencing server over the Public Service Telephone Network (PSTN) (also called the Plain Old Telephone System (POTS)).

The availability of low-cost personal computers, networking equipment, telecommunications, and related technology, however, has dramatically changed the way people communicate. One example of such change is the explosion of people connected to the global (sometimes referred to as the "public") Internet.

The connectivity achieved by the Internet--connecting numerous, different types of networks--is based upon a common protocol suite utilized by those

PT0000022

computers connecting to it. Part of the common protocol suite is the Internet Protocol (IP), defined in Internet Standard (STD) 5, Request for Comments (RFC) 791 (Internet Architecture Board). IP is a network-level, packet (i.e., a unit of transmitted data) switching protocol.

5 In recent years, the possibility of transmitting voice (i.e., audio) over the worldwide public Internet has been recognized. Voice over IP (VoIP) began with computer scientists experimenting with exchanging voice using personal computers (PCs) equipped with microphones, speakers, and sound cards.

10 VoIP further developed when, in March of 1996, the International Telecommunications Union-Telecommunications sector (ITU-T), a United Nations organization, adopted the H.323 Internet Telephony Standard. Among its specifications, H.323 specifies the minimum standards (e.g., call setup and control) that equipment must meet in order to send voice over the IP, and other packet-switched network protocols where quality of sound cannot be guaranteed. Thus, conferencing servers (also called multipoint control units (MCUs)) were developed to host audio conferences where participants connected to a central MCU using PC-based equipment and the Internet, rather than traditional phone equipment over the PSTN.

15 20 More recently, several alternatives to H.323 have been developed. One such alternative is the Session Initiation Protocol (SIP) developed within the Internet Engineering Task Force (IETF) Multiparty Multimedia Session Control (MMUSIC) Working Group. SIP, which is well-known in the relevant art(s), is a signaling protocol for Internet conferencing and telephony. SIP addresses users using an e-mail-like address and utilizes a portion of the infrastructure used for Internet e-mail delivery. SIP is more powerful than H.323 in providing call control and extended feature sets. It handles basic setup functions as well as enhanced services (e.g., call forwarding).

25 Given the rapid pace of development in the telephony industry--both in protocols and equipment--and the existence of legacy equipment and protocols (e.g., telephones and switching networks such as the PSTN), it is desirabl**PT000023**

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conferencing servers (or MCUs) to provide support for users of both new (i.e., packet-based) and legacy (i.e., switching-based) systems. Therefore, what is needed is a hybrid server architecture for mixing and non-mixing client conferencing. The hybrid server should realize the capabilities of the various participants' equipment (e.g., PC-based client versus phone-based clients) and provide the appropriate audio data to each participant.

Summary of the Invention

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PTO000024

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The present invention is directed to a hybrid server architecture, that meets the above-identified needs, whereby mixing (e.g., PC-based clients) and non-mixing (e.g., phone) clients can simultaneously participate in a single audio conference application.

The system of the present invention includes a receiver capable of receiving audio packets from each client, means for determining and keeping a list of clients who are currently active speakers, and means for storing information (e.g., database, list, linked list, table, flag, or the like) indicative of whether each client has the capability to mix multiple audio streams.

The system also includes a multiplexor capable of multiplexing the packets of audio data received from each client on the list of active speakers into a multiplexed stream, and a mixer capable of mixing the packets of audio data received from each client on the list of active speakers into one combined packet.

The system further includes means for sending the multiplexed stream to each of the clients which have the capability to mix multiple audio streams, and the combined packet to each of the plurality of clients which do not have the capability to mix multiple audio streams.

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The method and computer program product of the present invention include the steps of receiving audio packets from each client, determining which are active speakers and forming an active speakers list. Then, the clients are divided into two categories--those which have the capability to mix multiple

PTO000024

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audio streams and those which do not. For those clients which can mix, the server multiplexes the packets of audio data received from each client on the active speakers list into a multiplexed stream. For those clients which cannot mix, the server mixes the packets of audio data received from each client on the active speakers list into one combined packet.

10

The method and computer program product of the present invention then send the multiplexed stream to each of the clients that can mix, and send the combined packet to each of the clients that cannot mix. The method and computer program product of the present invention also perform an "echo suppression" during the sending of either the multiplexed stream or combined packet so that each client, if they are an active speaker, will not hear themselves speaking.

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An advantage of the present invention is that a single server or multipoint control unit (MCU) can provide conferencing services to multiple clients that are using varying equipment and protocols.

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Another advantage of the present invention is that servers or MCUs, by realizing the audio mixing capabilities of their clients, can distribute the computational burden of mixing audio streams of the active speakers.

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Another advantage of the present invention is that by providing multiplexed packets to clients who are capable of mixing, better sound quality is achieved by reducing the effect of "transcoding artifacts."

Yet another advantage of the present invention is that by providing multiplexed packets to clients who are capable of mixing, servers or MCUs can be scaled to support more simultaneous conferences due to the efficiency gained by not having to mix for every client.

Further features and advantages of the invention as well as the structure and operation of various embodiments of the present invention are described in detail below with reference to the accompanying drawings.

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Brief Description of the Figures

The features and advantages of the present invention will become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit of a reference number identifies the drawing in which the reference number first appears.

FIG. 1 is a block diagram illustrating the overall system architecture of an embodiment of the present invention, showing connectivity among the various components;

FIG. 2 is a block diagram illustrating the system architecture of a hybrid mixer according to an embodiment of the present invention;

FIG. 3 is a flowchart representing the general operational flow according to an embodiment of the present invention; and

FIG. 4 is a block diagram of an example computer system for implementing the present invention.

Detailed Description of the Preferred Embodiments

I. System Architecture Overview

This present invention is directed to a hybrid server architecture for mixing (e.g., mixing capable PC clients connected via Internet Protocol (IP)) and non-mixing (e.g., phone) client conferencing. In a preferred embodiment of the present invention, a service provider supplies the infrastructure (i.e., a hybrid conferencing server or multi-point control unit (MCU)), agreement terms, and facilities so that clients (i.e., participants) who subscribe to their conferencing services can take part in a multi-party audio conference application. The service provider would also provide customer service, support, and billing as will be

apparent to one skilled in the relevant art(s) after reading the description herein. The clients would connect to the hybrid server using whatever equipment and protocol they currently have access to.

Referring to **FIG. 1**, a block diagram illustrating the system architecture of an embodiment of the present invention, showing connectivity among the various components, is shown. More specifically, **FIG. 1** illustrates a hybrid network architecture 100 for IP-based client and phone client conferencing. Architecture 100 includes a plurality of PC-based clients 102 (shown as clients 102a-102n) which connect to a wide area network (e.g., the public Internet) 104. The wide area network 104 is connected to the service provider's facilities through a router 106 and a switch 114 which is capable of routing IP packets.

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Architecture 100 also includes a plurality of telephone-based clients 108 (shown as clients 108a-108n) which connect to the PSTN 110 (i.e., circuit-switched network). The PSTN 110 is connected to the service provider's facilities (i.e., server 116) through a gateway 112 and the switch 114.

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Connected to the switch 114, is the service provider's server or multipoint control unit (MCU) 116, which includes a mixer 118. The switch 114 enables the service provider's MCU 116 to receive audio packets from both PC-based clients 102 using, for example, the SIP protocol, as well as receive H.323 protocol packets from the telephone-based clients 108 who connect via gateway 112.

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The present invention is described in terms of the above example. This is for convenience only and is not intended to limit the application of the present invention. In fact, after reading the following description, it will be apparent to one skilled in the relevant art(s) how to implement the following invention in alternative embodiments (e.g., server 116 handling protocols and equipment other than those illustrated herein). Further, while **FIG. 1** illustrates mixer 118 as part of MCU 116, those skilled in the relevant art(s) will appreciate that mixer 118 can, in an alternate embodiment, be separated from, and coupled to, MCU 116.

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The terms "client," "subscriber," "party," "participant," and the plural form of these terms may be used interchangeably throughout herein to ref**PT0000027**

those who would access, use, and/or benefit from the hybrid server of the present invention.

II. Mixer Architecture

Referring to FIG. 2, a block diagram illustrating the system architecture of a hybrid mixer 118 according to an embodiment of the present invention is shown. More specifically, the architecture of mixer 118 which allows the service provider to supply a hybrid network architecture 100 for IP-based client and phone client conferencing is now described in more detail.

Mixer 118 includes buffers 202 which receive audio packets from the clients 102 and 108 via switch 114. (See FIG. 1.) Mixer 118 also includes a packet retriever 206 which is coupled to buffers 202. The connection between buffers 202 and packet retriever 206, however, is only complete when a switch 204 is closed. Switch 204 is an event driven switch which can be timer driven. An event can be generated on a pre-determined time schedule (e.g., every 0.5 to 1.0 second). In an alternative embodiment, events may be buffer size driven. That is, an event may be generated every time buffers 202 receive a pre-determined number of audio data packets (e.g., 90 milliseconds of audio data for each speaker).

Mixer 118 also includes a packet mixer/multiplexor (“mix/mux”) 208. The mix/mux 208 forms multiplexed audio packets to be sent to clients capable of mixing multiple audio streams (e.g., clients 102) and also forms mixed audio streams to be sent to non-mixing clients (e.g., clients 108 which have no capability to mix multiple audio streams). Mixer 118 also includes a packet sender 210 which forwards the packets created by mix/mux 208 to clients 102 and 108.

III. System Operation

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Referring to **FIG. 3**, a flowchart representing the general operational flow, according to an embodiment of the present invention, is shown. More specifically, **FIG. 3** depicts an example control flow 300 involved in providing a hybrid IP-based client and phone client audio conference. Control flow 300 begins at step 302. In step 302, an event is detected by the mixer 118 causing switch 204 to close. As mentioned above, such an event can be timer driven, where an event is generated on a pre-determined time schedule. In an alternative embodiment, events may be buffer size driven. That is, an event may be generated every time buffers 202 receive a pre-determined number of audio data packets from each speaker.

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Upon detecting an event, control flow 300 proceeds to step 304. In step 304, a counter j is set to one. (Assume there are N clients currently participating in an audio conference application.) In step 306, control flow 300 determines whether the active speaker list needs to be updated. In an embodiment, the active speaker list is updated on a pre-determined time schedule which is independent of the event time schedule in step 302.

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If the determination of step 306 is true, the list of active speakers is updated in step 308. The list of active speakers may be updated, in one embodiment, by comparing the average energy values of each participant's audio data. As will be apparent to one skilled in the relevant art(s), if a conference has N participants, the sever will only allow a certain number of speakers k to be considered "active" (i.e., those participants who are actually speaking rather than simply listening). (Where, for example, $k = 3 \ll N$.) This is because if the number of active speakers is too large, the data being sent by the server to every participant in the audio conference will be unintelligible (i.e., too many participants speaking on top of each other).

In step 310, control flow 300 determines whether all the parties have been sent an updated audio stream during the current event detected in step 302. **P10000029**

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is, the determination of step 310 is whether j is equal to N . If not, in step 312, control flow 300 determines whether party j is a mixing client. Whether a particular party is a mixing client (e.g., a PC-based client 102 using SIP) or not (e.g., a telephone client 108 using H.323) is static state information which, in one embodiment, may be stored on the MCU 116 upon each client's connection to the audio conference. Such information storage can be in the form of a database, internal memory such as a list, linked list, table, or flag or the like.

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Further, the determination of each client's mixing capability can be facilitated, in one embodiment, by the service provider inserting proprietary code into the audio stream or control stream received from its subscribers (i.e., clients 102 or 108). In an alternate embodiment, such mixing capability information may already be present in the audio stream received from subscribers as newer telephony protocols are developed by the IETF and the like.

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In step 314, control flow 300 multiplexes (by employing mix/mux 208) the audio stream data (stored on retriever 206) for all k active speakers. In step 314, active speaker audio data for each and every active speaker is multiplexed. However, as will be apparent to those skilled in the relevant art(s), if party j is an active speaker, step 314 will not include party j 's own audio data in the multiplexed packets. This is, in essence, an echo suppression function so that party j will not "hear themselves speak."

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If step 312 determines that party j is non-mixing client, then step 316 decodes all the active speaker audio data into raw uncompressed data. As in step 314, step 316 will decode all active speaker audio data for each and every active speaker. However, as will be apparent to those skilled in the relevant art(s), if party j is an active speaker, step 316 will not include party j 's own audio data in the decoded data. This is, in essence, an echo suppression function so that party j will not "hear themselves speak." Then, the active speaker data is mixed in step 318 and encoded into a single stream in step 320. For example, if there are two (i.e., $k = 2$) active speakers, step 320 will encode two 90ms raw frames of data and encode them into a single 90ms frame of data.

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Then, in step 322, control flow 300 either sends the multiplexed audio packet (created in step 314) to a mixing client or a mixed audio stream (created in step 320) to a non-mixing client. In step 324, the counter j is incremented so that the next client can receive updated audio data during the current event detected in step 302. As will be appreciated by one skilled in the relevant art(s) and indicated by step 326, steps 310-324 loop until all participants (i.e., $j = N$) have been sent an updated audio stream during the current event detected in step 302. Thus, control flow 300 would continue until the server ceases to host the audio conference (i.e., the conference is over and terminated).

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IV. Environment

The present invention (i.e., architecture 100, control flow 300, or any part thereof) may be implemented using hardware, software or a combination thereof and may be implemented in one or more computer systems or other processing systems. In fact, in one embodiment, the invention is directed toward one or more computer systems capable of carrying out the functionality described herein.

An example of a computer system 400 is shown in FIG. 4. The computer system 400 represents any single or multi-processor computer. The computer system 400 includes one or more processors, such as processor 404. The processor 404 is connected to a communication infrastructure 406 (e.g., a communications bus, cross-over bar, or network). Various software embodiments are described in terms of this exemplary computer system. After reading this description, it will become apparent to a person skilled in the relevant art how to implement the invention using other computer systems and/or computer architectures.

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Computer system 400 can include a display interface 405 that forwards graphics, text, and other data from the communication infrastructure 402 (or from a frame buffer not shown) for display on the display unit 430.

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Computer system 400 also includes a main memory 408, preferably random access memory (RAM), and may also include a secondary memory 410. The secondary memory 410 may include, for example, a hard disk drive 412 and/or a removable storage drive 414, representing a floppy disk drive, a magnetic tape drive, an optical disk drive, etc. The removable storage drive 414 reads from and/or writes to a removable storage unit 418 in a well-known manner. Removable storage unit 418, represents a floppy disk, magnetic tape, optical disk, etc. which is read by and written to by removable storage drive 414. As will be appreciated, the removable storage unit 418 includes a computer usable storage medium having stored therein computer software and/or data.

In alternative embodiments, secondary memory 410 may include other similar means for allowing computer programs or other instructions to be loaded into computer system 400. Such means may include, for example, a removable storage unit 422 and an interface 420. Examples of such may include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an EPROM, or PROM) and associated socket, and other removable storage units 422 and interfaces 420 which allow software and data to be transferred from the removable storage unit 422 to computer system 400.

Computer system 400 may also include a communications interface 424. Communications interface 424 allows software and data to be transferred between computer system 400 and external devices. Examples of communications interface 424 may include a modem, a network interface (such as an Ethernet card), a communications port, a PCMCIA slot and card, etc. Software and data transferred via communications interface 424 are in the form of signals 428 which may be electronic, electromagnetic, optical or other signals capable of being received by communications interface 424. These signals 428 are provided to communications interface 424 via a communications path (i.e., channel) 426. This channel 426 carries signals 428 and may be implemented using wire or

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cable, fiber optics, a phone line, a cellular phone link, an RF link and other communications channels.

In this document, the terms "computer program medium" and "computer usable medium" are used to generally refer to media such as removable storage drive 414, a hard disk installed in hard disk drive 412, and signals 428. These computer program products are means for providing software to computer system 400. The invention is directed to such computer program products.

Computer programs (also called computer control logic) are stored in main memory 408 and/or secondary memory 410. Computer programs may also be received via communications interface 424. Such computer programs, when executed, enable the computer system 400 to perform the features of the present invention as discussed herein. In particular, the computer programs, when executed, enable the processor 404 to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system 400.

In an embodiment where the invention is implemented using software, the software may be stored in a computer program product and loaded into computer system 400 using removable storage drive 414, hard drive 412 or communications interface 424. The control logic (software), when executed by the processor 404, causes the processor 404 to perform the functions of the invention as described herein.

In another embodiment, the invention is implemented primarily in hardware using, for example, hardware components such as application specific integrated circuits (ASICs). Implementation of the hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s).

In yet another embodiment, the invention is implemented using a combination of both hardware and software.

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V. Conclusion

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While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example, and not limitation. For example, the operational flow presented in **FIG. 3**, is for example purposes only and the present invention is sufficiently flexible and configurable such that it may flow in ways other than that shown.

Further, it will be apparent to persons skilled in the relevant art that various changes in form and detail can be made therein without departing from the spirit and scope of the invention. Thus the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

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What Is Claimed Is:

1 A method of providing audio conferencing for a plurality of clients using
2 varying equipment and protocols, comprising the steps of:

3 (1) receiving an audio packet from each of the plurality of clients;
4 (2) determining which of the plurality of clients is an active speaker
5 and forming an active speakers list;

6 (3) determining that a first subset of the plurality of clients has the
7 capability to mix multiple audio streams;

8 (4) determining that a second subset of the plurality of clients does not
9 have the capability to mix multiple audio streams;

10 (5) multiplexing said packets of audio data received from each client
11 on said active speakers list into a multiplexed stream;

12 (6) sending said multiplexed stream to each of said first subset of the
13 plurality of clients;

14 (7) mixing said packets of audio data received from each client on said
15 active speakers list into one combined packet; and

16 (8) sending said combined packet to each of said second subset of the
17 plurality of clients;

18 whereby said plurality of clients can simultaneously participate in a single
19 audio conference application.

1 2. The method of claim 1, further comprising the step of:

2 before sending said multiplexed stream to one of said first subset of the
3 plurality of clients, removing from said multiplexed stream said packets of audio
4 data received from said one of said first subset of the plurality of clients when said
5 one of said first subset of the plurality of clients is on said active speakers list.

1 3. The method of claim 1, further comprising the step of:
2 before sending said combined packet to one of said second subset of the
3 plurality of clients, removing from said combined packet said packets of audio
4 data received from said one of said second subset of the plurality of clients when
5 said one of said second subset of the plurality of clients is on said active speakers
6 list.

1 4. The method of claim 1, wherein at least one of said first subset of the
2 plurality of clients is using PC-based equipment and the Session Initiation
3 Protocol (SIP).

1 5. The method of claim 1, wherein at least one of said second subset of the
2 plurality of clients is using a telephone and the H.323 protocol.

1 6. A system for providing audio conferencing for a plurality of clients,
2 comprising:

3 a receiver capable of receiving an audio packet from each of the plurality
4 of clients;

5 means for maintaining a list of each of the plurality of clients that is an
6 active speaker;

7 means for storing information indicative of whether each of the plurality
8 of clients has the capability to mix multiple audio streams;

9 a multiplexor capable of multiplexing said packets of audio data received
10 from each client on said list of active speakers into a multiplexed stream;

11 a mixer capable of mixing said packets of audio data received from each
12 client on said list of active speakers into one combined packet; and

13 a packet sender capable of sending, based on information in said means for
14 storing, said multiplexed stream to each of the plurality of clients which have the
15 capability to mix multiple audio streams, and capable of sending said combined

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16 packet to each of the plurality of clients which do not have the capability to mix
17 multiple audio streams;

18 whereby the plurality of clients can simultaneously participate in a single
19 audio conference application.

1 7. The system of claim 6, further comprising:

2 means for removing, before said packet sender sends said multiplexed
3 stream to one of the plurality of clients which have the capability to mix multiple
4 audio streams, from said multiplexed stream said packets of audio data received
5 from said one of the plurality of clients, when said one of the plurality of clients
6 is on said list of active speakers.

7 8. The system of claim 6, further comprising:

8 means for removing, before said packet sender sends said combined packet
9 to one of the plurality of clients which do not have the capability to mix multiple
10 audio streams, from said combined packet said packets of audio data received
11 from said one of the plurality of clients, when said one of the plurality of clients
12 is on said list of active speakers.

13 9. The system of claim 6, wherein at least one of the plurality of clients,
14 which has the capability to mix multiple audio streams, is using PC-based
15 equipment and the Session Initiation Protocol (SIP).

16 10. The system of claim 6, wherein at least one of the plurality of clients,
17 which does not have the capability to mix multiple audio streams, is using a
18 telephone and the H.323 protocol.

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1 N. A computer program product comprising a computer usable medium
2 having control logic stored therein for causing a computer to provide audio
3 conferencing for a plurality of clients using varying equipment and protocols, said
4 control logic comprising:

5 first computer readable program code means for causing the computer to
6 receive an audio packet from each of the plurality of clients;

7 second computer readable program code means for causing the computer
8 to determine which of the plurality of clients is an active speaker and forming an
9 active speakers list;

10 third computer readable program code means for causing the computer to
11 determine that a first subset of the plurality of clients has the capability to mix
12 multiple audio streams;

13 fourth computer readable program code means for causing the computer
14 to determine that a second subset of the plurality of clients does not have the
15 capability to mix multiple audio streams;

16 fifth computer readable program code means for causing the computer to
17 multiplex said packets of audio data received from each client on said active
18 speakers list into a multiplexed stream;

19 sixth computer readable program code means for causing the computer to
20 send said multiplexed stream to each of said first subset of the plurality of clients;

21 seventh computer readable program code means for causing the computer
22 to mix said packets of audio data received from each client on said active speakers
23 list into one combined packet; and

24 eighth computer readable program code means for causing the computer
25 to send said combined packet to each of said second subset of the plurality of
26 clients;

27 whereby the plurality of clients can simultaneously participate in a single
28 audio conference application.

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HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING

Abstract

A system, method and computer program product which allows both mixing (e.g., PC-based) and non-mixing (e.g., phone-based) clients to participate in a single audio conference. The system includes a hybrid multi-point control unit (i.e., conferencing server) that performs mixing for phone-based clients and multiplexing for PC-based clients. The method and computer program product determines which clients have the capability to mix multiple audio streams and which do not. For those clients capable of mixing, the server multiplexes the packets of audio data received from each client on the active speakers list into a multiplexed stream. For those clients that are not capable of mixing, the server mixes the packets of audio data received from each client on the active speakers list into one combined packet.

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11/5/00
JULY 12 1996
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06/28/00

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR § 1.53(b)).

Attorney Docket No.	1719.0340000
First Inventor or Application Identifier	Frank J. Chu
Title	Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing
Express Mail Label No.	JULY 12 1996 PTO

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original, and a duplicate for fee processing)
2. Specification [Total Pages 19]
(preferred arrangement set forth below)
 - Descriptive title of the Invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. Drawing(s) (35 U.S.C. 113) [Total Sheets 4]
4. Oath or Declaration [Total Pages _____]
 - a. Newly executed (original or copy)
 - b. Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed)
[Note Box 5 below]
- i. DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR §§ 1.63(d)(2) and 1.33(b).
5. Incorporation By Reference (useable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. Computer Readable Copy
 - b. Paper Copy (identical to computer copy)
 - c. Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. Assignment Papers (cover sheet & document(s))
9. 37 CFR 3.73(b) Statement Power of Attorney (when there is an assignee)
10. English Translation Document (if applicable)
11. Information Disclosure Statement (IDS)/PTO-1449 Copies of IDS Citations
12. Preliminary Amendment
13. Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
14. *Small Entity Statement(s) Statement filed in prior application, Status still proper and desired
15. Certified Copy of Priority Document(s) (If foreign priority is claimed)
16. Other: 37 C.F.R. § 1.136(a)(3) Authorization
 Other:

*NOTE FOR ITEMS 1 & 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.37), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

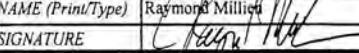
 Continuation Divisional Continuation-in-Part (CIP) of prior application No: _____ / _____

Prior application information: Examiner _____ Group/Art Unit: _____

18. CORRESPONDENCE ADDRESS

Customer Number or Bar Code Label (Insert Customer No. or Attach bar code label here) Correspondence address below

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SIGNATURE			

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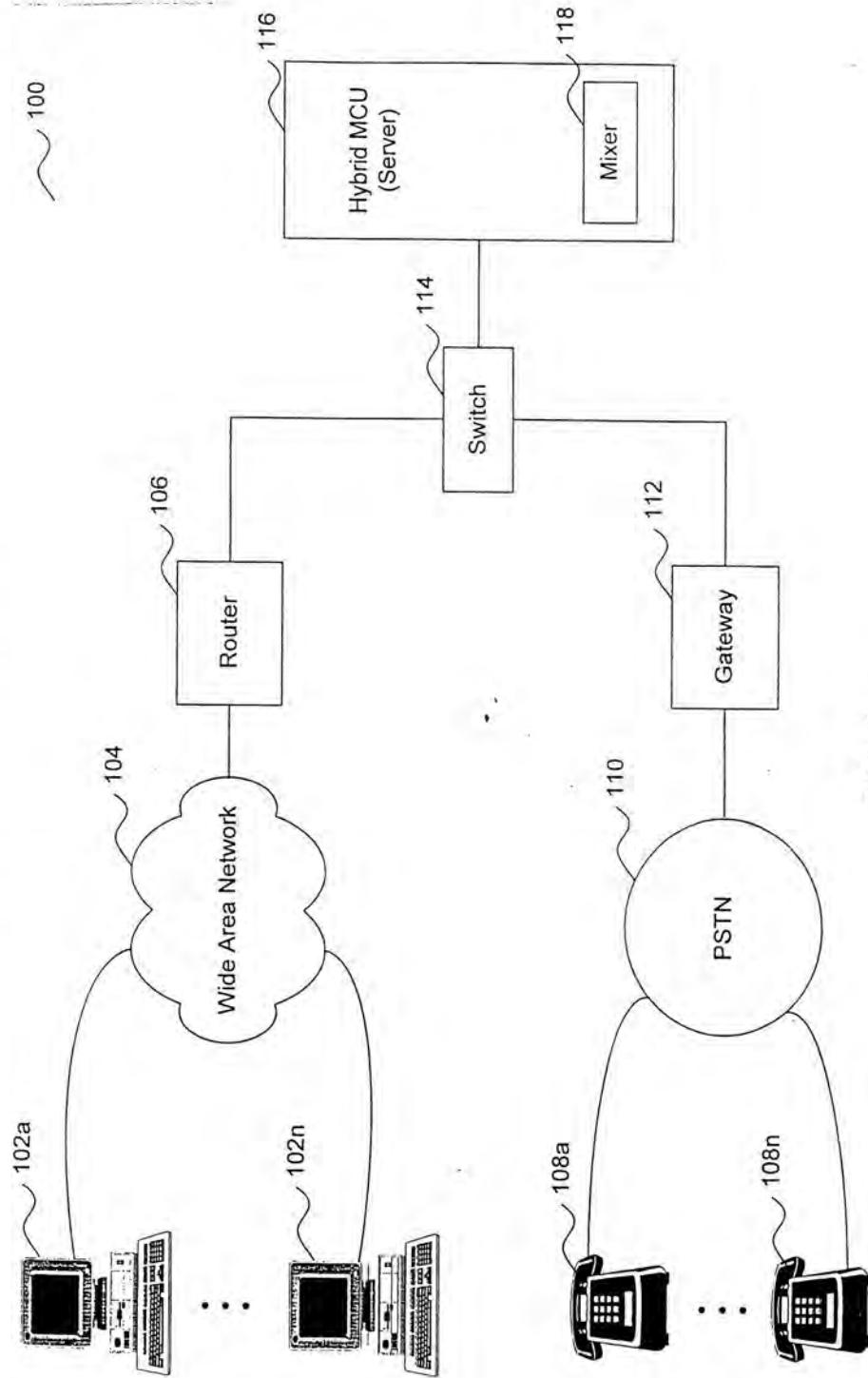


FIG. 1

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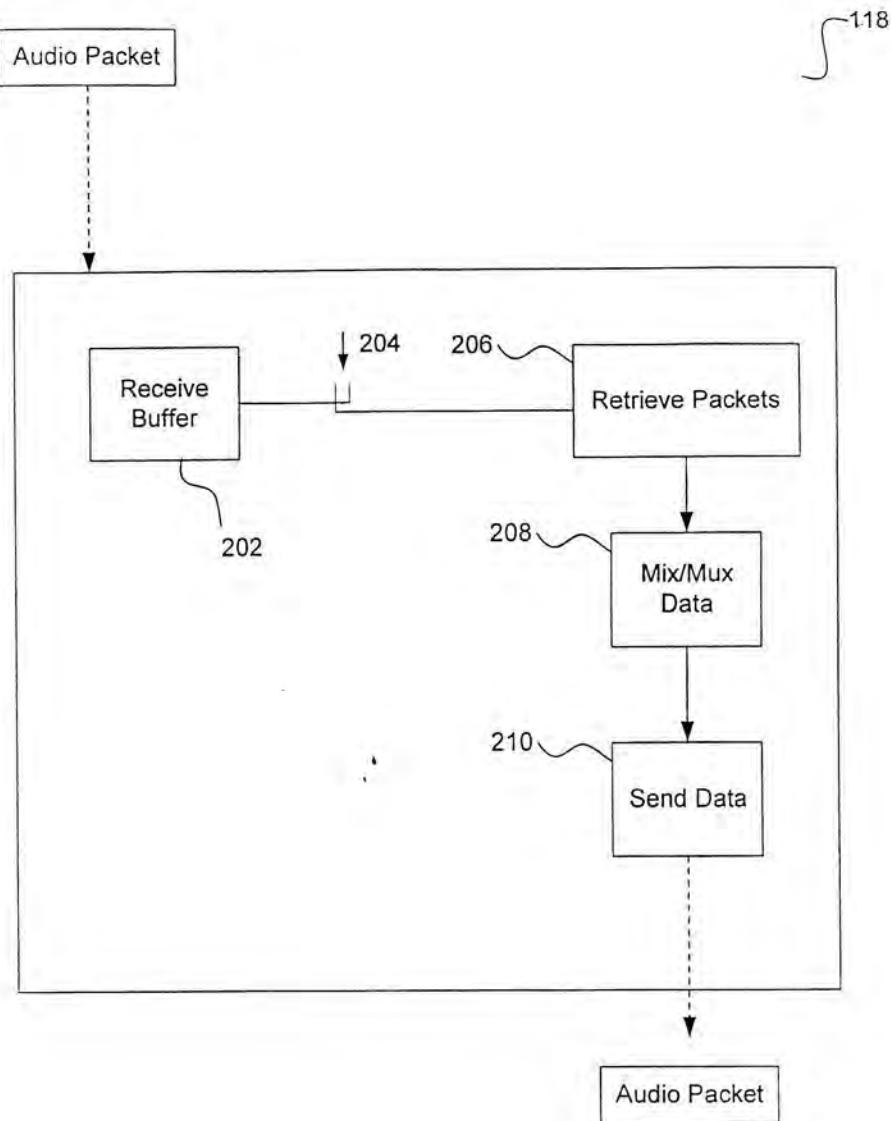


FIG. 2

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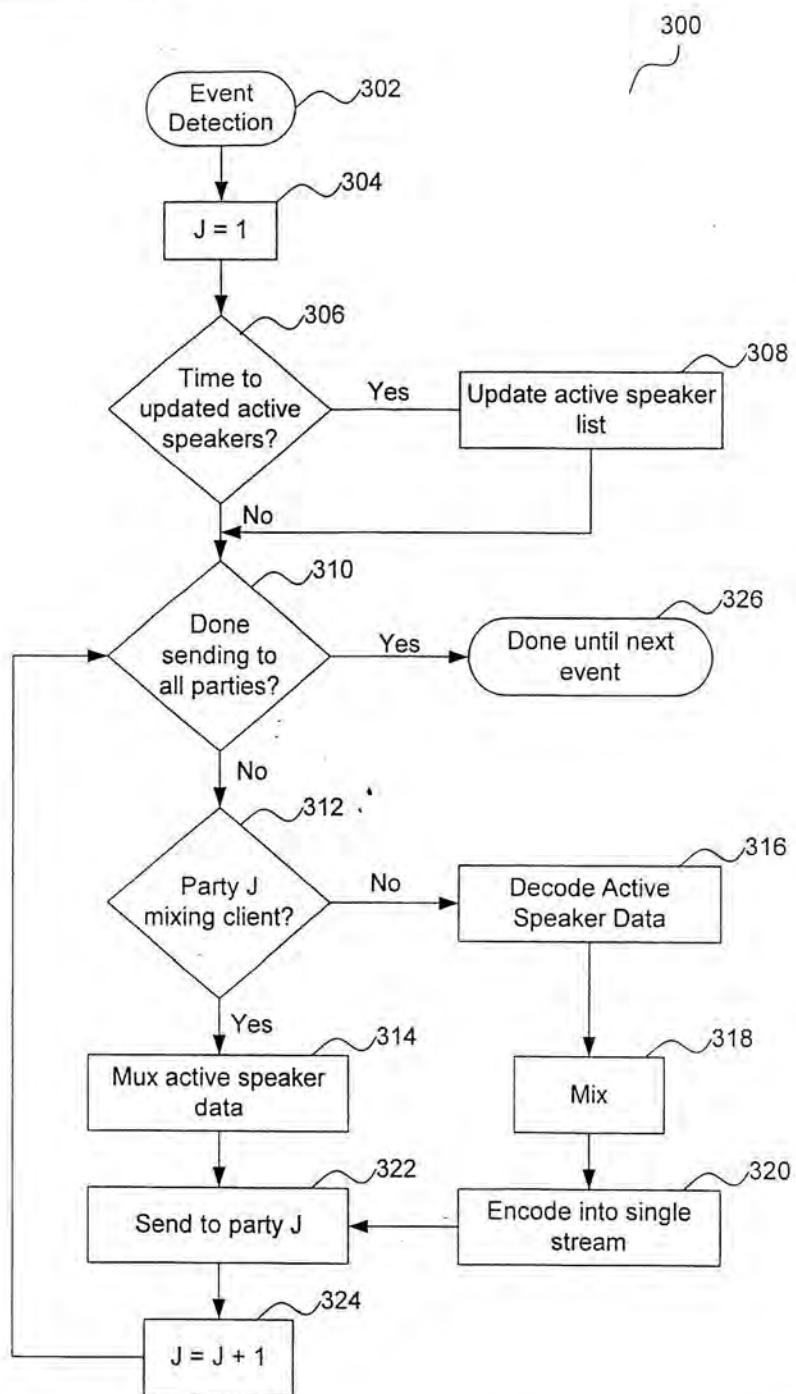


FIG. 3

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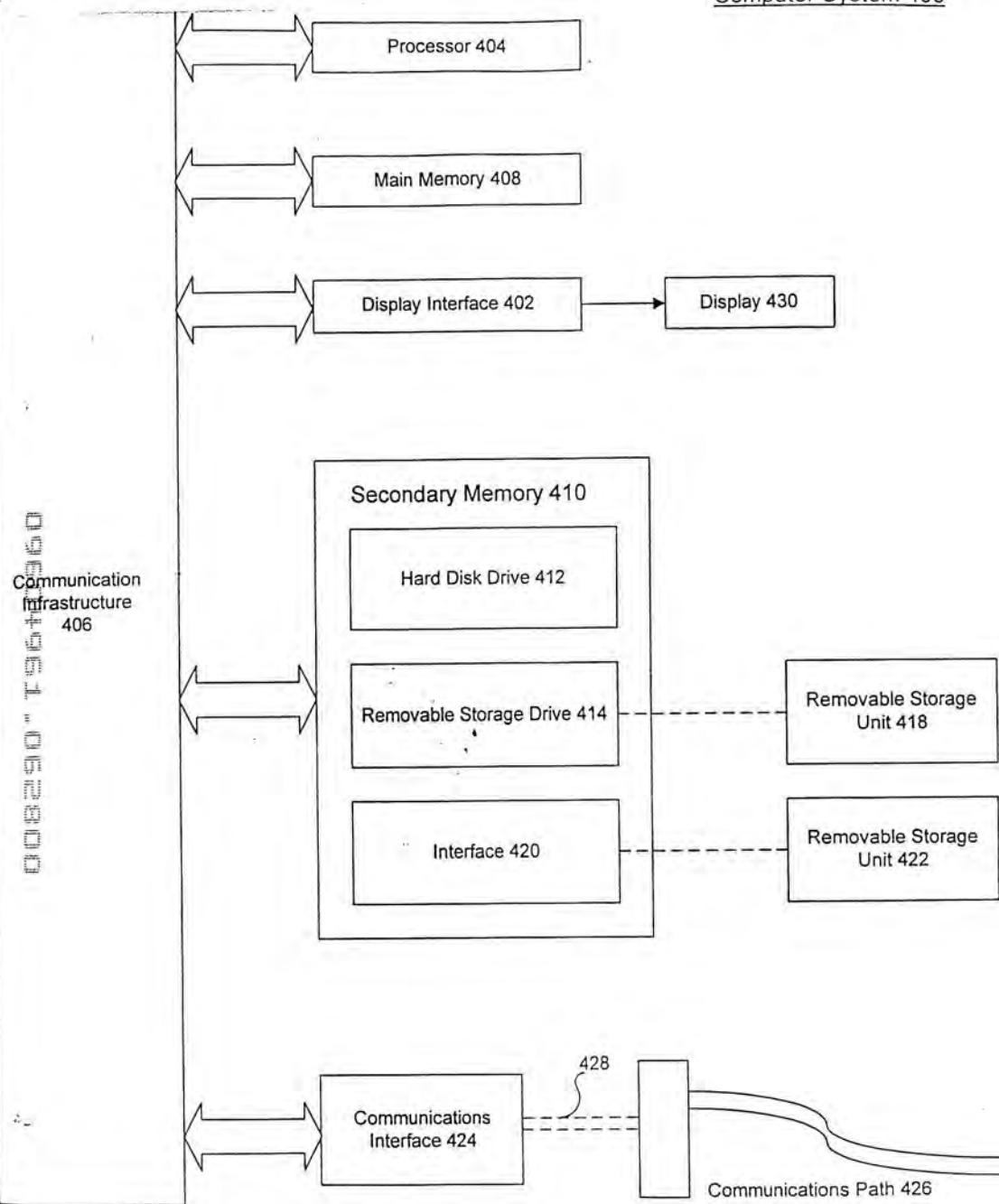


FIG. 4

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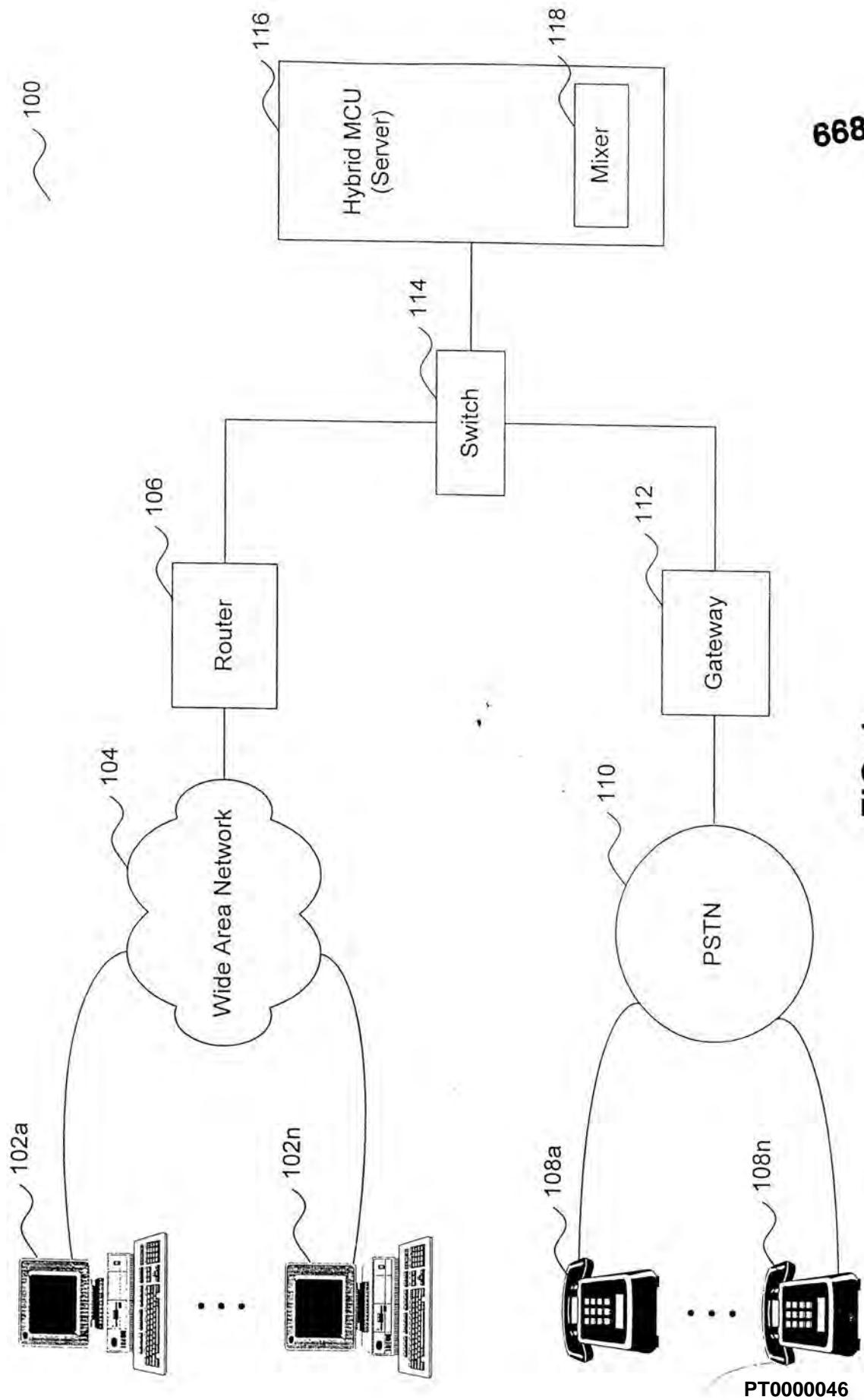


FIG. 1

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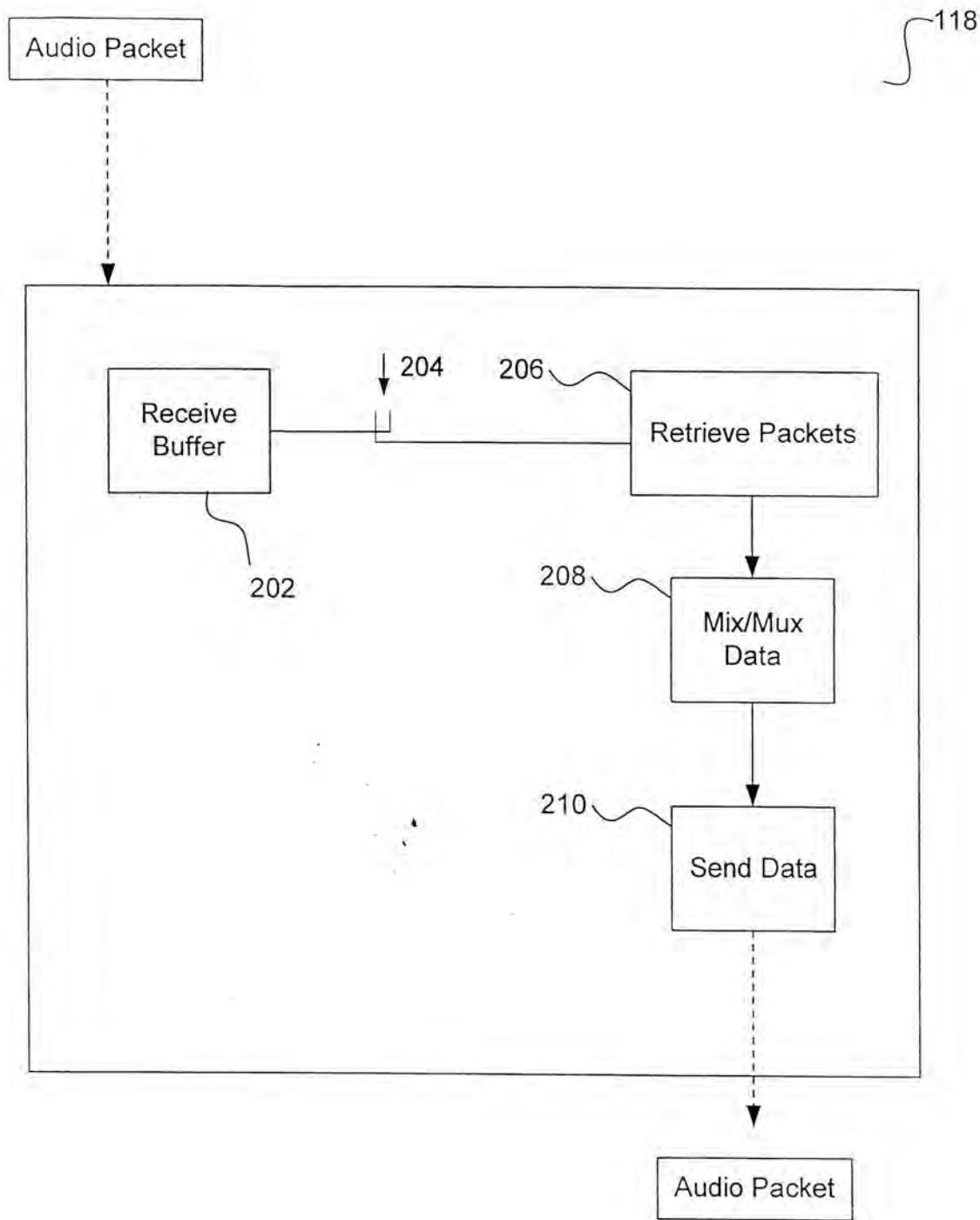


FIG. 2

PCT0000048 0002-63.vsd/3

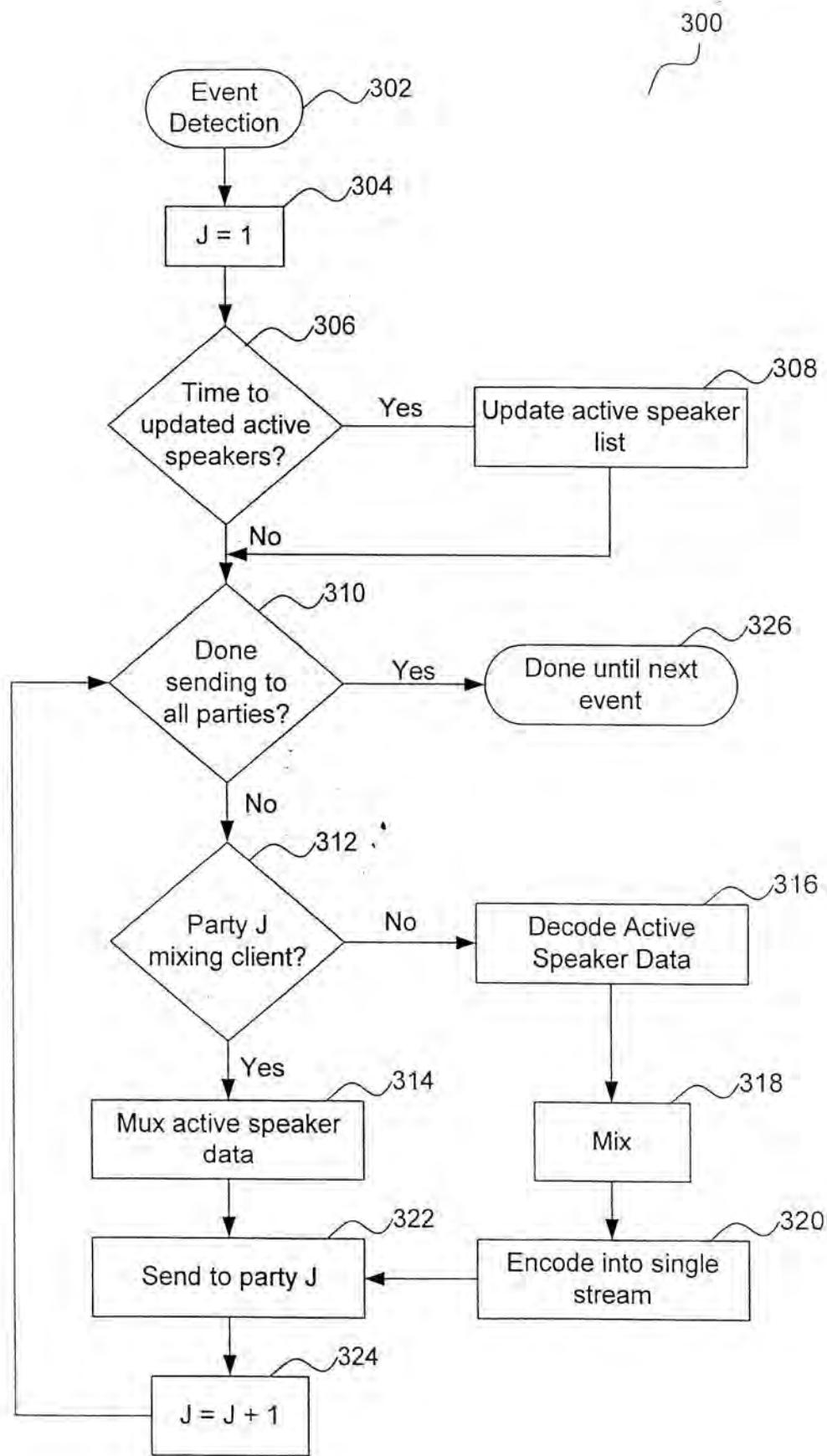


FIG. 3

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0002-63.vsd/3

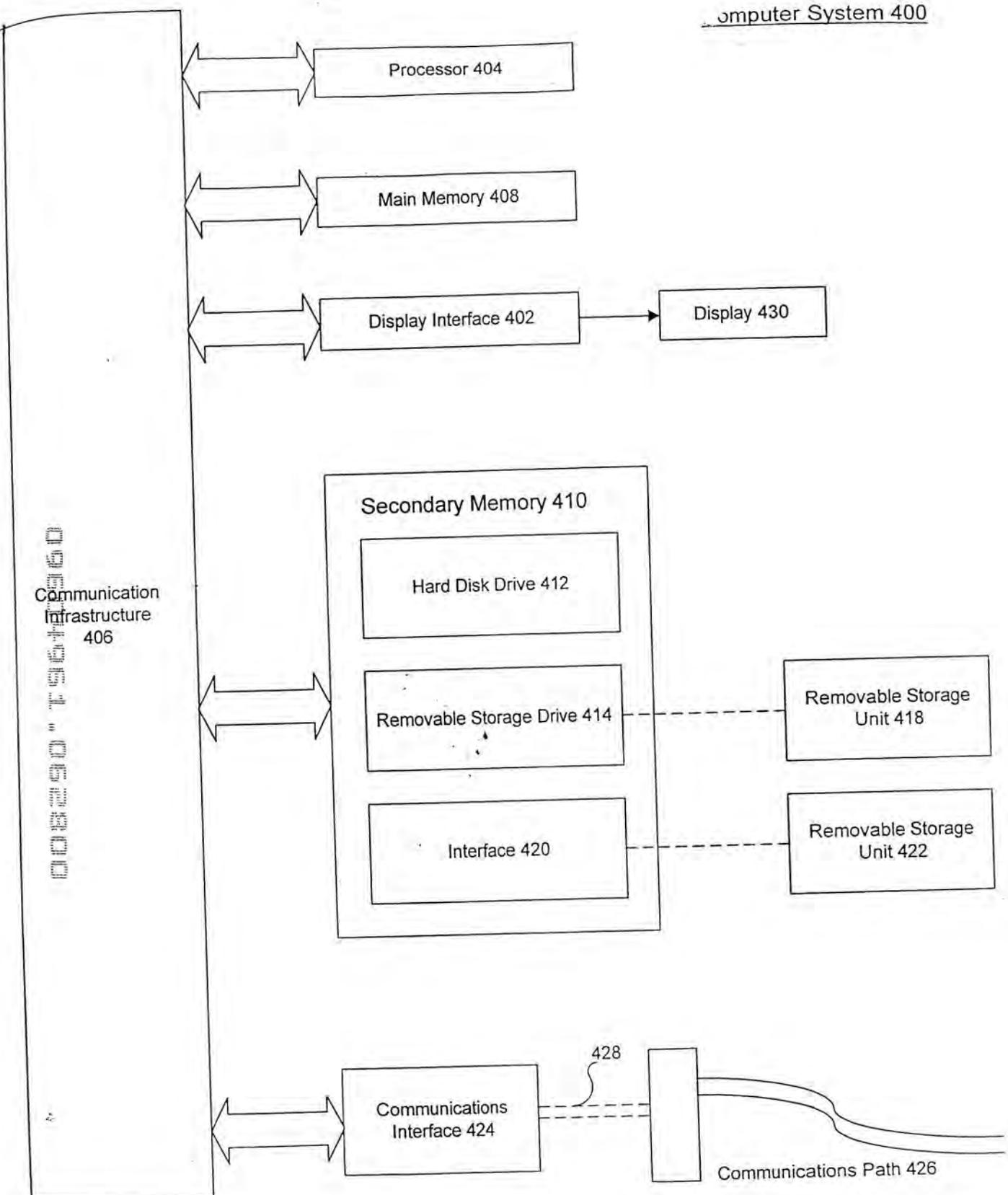


FIG. 4

0002-63.vsd/4

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PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 29, 1999

Application or Docket Number
(4) 09 604961**CLAIMS AS FILED - PART I**

	(Column 1)	(Column 2)
FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	13	minus 20 = *
INDEPENDENT CLAIMS	3	minus 3 = *
MULTIPLE DEPENDENT CLAIM PRESENT		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY
TYPE OTHER THAN
SMALL ENTITY

RATE	FEES	RATE	FEES
	345.00	OR	69.00
X\$ 9=		OR	X\$18=
X39=		OR	X78=
+130=		OR	+260=
TOTAL		OR	TOTAL 690

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM			

SMALL ENTITY

OTHER THAN
SMALL ENTITY

RATE	ADDI- TIONAL FEE	RATE	ADDI- TIONAL FEE
X\$ 9=		OR	X\$18=
X39=		OR	X78=
+130=		OR	+260=
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM			

SMALL ENTITY

OTHER THAN
SMALL ENTITY

RATE	ADDI- TIONAL FEE	RATE	ADDI- TIONAL FEE
X\$ 9=		OR	X\$18=
X39=		OR	X78=
+130=		OR	+260=
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM			

SMALL ENTITY

OTHER THAN
SMALL ENTITY

RATE	ADDI- TIONAL FEE	RATE	ADDI- TIONAL FEE
X\$ 9=		OR	X\$18=
X39=		OR	X78=
+130=		OR	+260=
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE

- * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
- ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
- *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

	Type	L #	Hics	Search Text	DBs	Time Stamp	Comments
1	BRS	L1	901	conference\$3 same packet same (audio or voice)	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2003/09/15 12:29	
2	BRS	L2	120	conference\$3 same (mix\$3 or multiplex\$3) same audio same packet	USPAT; US-PGP UB; EPO; JPO; DERWEN T; IBM_TD B	2003/09/15 13:02	
3	IS&R	L3	449	(370/260,261, 262,263).CCLS	USPAT	2003/09/15 12:45	

PT0000051



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Chu *et al.*

Appl. No. To Be Assigned

Filed: June 28, 2000

For: **Hybrid Server Architecture for
Mixing and Non-Mixing Client
Conferencing**

Art Unit: To Be Assigned

Examiner: To Be Assigned

Atty. Docket: 1719.0340000

**Authorization To Treat A Reply As Incorporating An Extension Of Time
Under 37 C.F.R. § 1.136(a)(3)**

Commissioner for Patents
Washington, D.C. 20231

Sir:

The U.S. Patent and Trademark Office is hereby authorized to treat any concurrent or future reply that requires a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. The U.S. Patent and Trademark Office is hereby authorized to charge all required extension of time fees to our Deposit Account No. 19-0036, if such fees are not otherwise provided for in such reply. A duplicate copy of this authorization is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

A handwritten signature in black ink, appearing to read "Raymond Millien".

Raymond Millien
Attorney for Applicants
Registration No. 43,806

Date: 6/28/00

1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
(202) 371-2600

RVM:jb
P:\USERS\WBLADES\Raymond Millien\1719\0340000.AUT

PT0000052

SKGF 4/27/00 mac

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Chu *et al.*

Appl. No. To Be Assigned

Filed: June 28, 2000

For: **Hybrid Server Architecture for
Mixing and Non-Mixing Client
Conferencing**

Art Unit: To Be Assigned

Examiner: To Be Assigned

Atty. Docket: 1719.0340000

JC712 U.S. PRO
09/604961
06/28/00



DUPLICATE

**Authorization To Treat A Reply As Incorporating An Extension Of Time
Under 37 C.F.R. § 1.136(a)(3)**

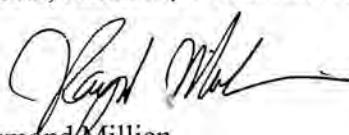
Commissioner for Patents
Washington, D.C. 20231

Sir:

The U.S. Patent and Trademark Office is hereby authorized to treat any concurrent or future reply that requires a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. The U.S. Patent and Trademark Office is hereby authorized to charge all required extension of time fees to our Deposit Account No. 19-0036, if such fees are not otherwise provided for in such reply. A duplicate copy of this authorization is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

Date:

6/28/00

1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
(202) 371-2600

RVM:jb
P:\USERS\VBLADES\Raymond Millien\1719.0340000.AUT

PT0000053

SKGF 4/27/00 mac



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
 UNITED STATES PATENT AND TRADEMARK OFFICE
 WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
09/604,961	06/28/2000	Frank J. Chu	1719.0340000

FORMALITIES LETTER

Sterne Kessler Goldstein & Fox PLLC
 Suite 600
 1100 New York Avenue N W
 Washington, DC 20005-3934



OC00000005411202

Date Mailed: 09/19/2000

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$ 690 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).
- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

- The balance due by applicant is \$ 820.

A copy of this notice MUST be returned with the reply.

Customer Service Center

Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
09/604,961	06/28/2000	Frank J. Chu	1719.0340000

Sterne Kessler Goldstein & Fox PLLC
Suite 600
1100 New York Avenue N W
Washington, DC 20005-3934

FORMALITIES LETTER



OC000000005411202



Date Mailed: 09/19/2000

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$ 690 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).
- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

- The balance due by applicant is \$ 820.

A copy of this notice MUST be returned with the reply.

Customer Service Center

Initial Patent Examination Division (703) 308-1202

PART 2 - COPY TO BE RETURNED WITH RESPONSE

12/20/2000 SDUONG 00000203 09604961

01 FC:101
02 FC:105710.00 QP
130.00 QP



STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

ATTORNEYS AT LAW

1100 NEW YORK AVENUE, N.W. • WASHINGTON, D.C. 20005-3934

PHONE: (202) 371-2600 • FACSIMILE: (202) 371-2540 • www.skgf.com

SECTOR



ROBERT GREENE STERNE
 EDWARD J. KESSLER
 JORGE A. GOLDSTEIN
 SAMUEL L. FOX
 DAVID K.S. CORNWELL
 ROBERT W. EDMOND
 TRACY-GENE G. DURKIN
 MICHELE A. CIMBALA
 MICHAEL B. RAY
 ROBERT E. SOKOHL
 ERIC K. STEFFE
 MICHAEL O. LEE

STEVEN R. LUDWIG
 JOHN M. COVERT*
 LINDA E. ALCORN
 ROBERT C. MILLONIG
 MICHAEL V. MESSINGER
 JUDITH U. KIM
 TIMOTHY J. SHEA, JR.
 DONALD R. MCPHAIL
 PATRICK E. GARRETT
 STEPHEN G. WHITESIDE
 JEFFREY T. HELVEY*
 HEIDI L. KRAUS

JEFFREY R. KURIN
 RAYMOND MILLIEN
 PATRICK D. O'BRIEN
 LAWRENCE B. BUGAIISKY
 CRYSTAL D. SAYLES
 EDWARD W. YEE
 ALBERT L. FERRO*
 DONALD R. BANOWITZ
 PETER A. JACKMAN
 MOLLY A. McCALL
 TERESA U. MEODER
 JEFFREY S. WEAVER

KRISTIN K. VIDOVICH
 KENDRICK P. PATTERSON
 DONALD J. FEATHERSTONE
 GRANT E. REED
 VINCENT L. CAPUANO
 JOHN A. HARROUN*
 ALBERT J. FASULO II *
 W. BRIAN EDGE*
 ELDORA ELLISON FLOYD*
 W. RUSSELL SWINDELL
 THOMAS C. FIALA

KAREN R. MARKOWICZ**
 SUZANNE E. ZISKA**
 BRIAN J. DEL BUONO**
 ANDREA J. KAMAGE**
 NANCY J. LEITH**
 ELIZABETH J. HAANES**
 MARK P. TERRY**
 TARJA H. NAUKKARINEN**

*BAR OTHER THAN D.C.

**REGISTERED PATENT AGENTS

December 19, 2000

WRITER'S DIRECT NUMBER:
 (202) 789-5506
INTERNET ADDRESS:
RMILLIEN@SKGF.COM

Commissioner for Patents
 Washington, D.C. 20231

Box Missing Parts

Re: U.S. Patent Application
 Appl. No. 09/604,961; Filed: June 28, 2000
 For: **Hybrid Server Architecture for Mixing and Non-Mixing Client
 Conferencing**
 Inventors: Chu *et al.*
 Our Ref: 1719.0340000

Sir:

In reply to the "Notice to File Missing Parts of Application--Filing Date Granted," dated September 19, 2000, Applicants submit the following documents for appropriate action by the U.S. Patent and Trademark Office:

1. PTO Fee Transmittal Form PTO/SB/17 (in duplicate);
2. Petition for Extension of Time under 37 C.F.R. § 1.136 (in duplicate);
3. Copy of the Notice to File Missing Parts;
4. Original Declaration, executed by the inventors;

PT0000056

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Commissioner for Patents

December 19, 2000

Page 2

5. Our Check No. 29844 for \$950.00 to cover:

\$710.00 Filing Fee for Patent Application (37 C.F.R. § 1.16)

\$130.00 Surcharge for late filing of Declaration (37 C.F.R. § 1.16)

\$110.00 For extension of time fees under 37 C.F.R. § 1.136; and

6. Return postcard.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. If extensions of time under 37 C.F.R. § 1.136 other than those otherwise provided for herewith are required to prevent abandonment of the present patent application, then such extensions of time are hereby petitioned, and any fees therefor are hereby authorized to be charged to our Deposit Account No. 19-0036. A duplicate copy of this letter is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

0340000.pt2

PT0000057

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Chu *et al.*

Appl. No. 09/604,961

Filed: June 28, 2000

For: **Hybrid Server Architecture for
Mixing and Non-Mixing Client
Conferencing**



Art Unit: 2631

Examiner: To be assigned

Atty. Docket: 1719.0340000

Petition For Extension of Time Under 37 C.F.R. § 1.136(a)(1)

Commissioner for Patents
Washington, D.C. 20231

Sir:

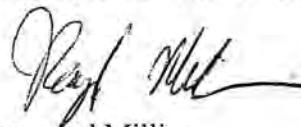
It is hereby requested that the period for replying to the outstanding Office Action be extended one (1) month from November 19, 2000 to December 19, 2000 by the filing of this Petition and fee payment.

The petition fee (37 C.F.R. § 1.17(a)) is believed to be \$110.00 for a one (1) month extension for a large entity. Fee payment is provided in our accompanying Check No. 29874. However, if extensions of time under 37 C.F.R. § 1.136 other than those provided herewith are required to prevent abandonment of the present patent application, then such extensions of time are hereby petitioned.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. A duplicate copy of this Petition is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

12/20/2000 SDUONG 00000203 09604961
03 FC:115 110.00 0P

Date: 12/19/00
1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
(202) 371-2600

PT0000058

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Chu *et al.*

Appl. No. 09/604,961

Filed: June 28, 2000

For: **Hybrid Server Architecture for
Mixing and Non-Mixing Client
Conferencing**



Art Unit: 2631

Examiner: To be assigned

Atty. Docket: 1719.0340000

DUPLICATE

Petition For Extension of Time Under 37 C.F.R. § 1.136(a)(1)

Commissioner for Patents
Washington, D.C. 20231

Sir:

It is hereby requested that the period for replying to the outstanding Office Action be extended one (1) month from November 19, 2000 to December 19, 2000 by the filing of this Petition and fee payment.

The petition fee (37 C.F.R. § 1.17(a)) is believed to be \$110.00 for a one (1) month extension for a large entity. Fee payment is provided in our accompanying Check No. 19844. However, if extensions of time under 37 C.F.R. § 1.136 other than those provided herewith are required to prevent abandonment of the present patent application, then such extensions of time are hereby petitioned.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. A duplicate copy of this Petition is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

A handwritten signature in black ink, appearing to read "Raymond Millien".

Raymond Millien
Attorney for Applicants
Registration No. 43,806

Date: 12/19/00
1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
(202) 371-2600

PT0000059

Declaration for Patent ApplicationDocket Number: 1719.0340000

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed and for which a patent is sought on the invention entitled Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing, the specification of which is attached hereto unless the following box is checked:

- was filed on June 28, 2000;
as United States Application Number 09/604,961; and
was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application, which designated at least one country other than the United States listed below, and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)	Priority Claimed
(Application No.)	<input type="checkbox"/> Yes <input type="checkbox"/> No
(Country)	(Day/Month/Year Filed)

(Application No.)	(Country)	<input type="checkbox"/> Yes <input type="checkbox"/> No
		(Day/Month/Year Filed)

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below.

(Application No.)	(Filing Date)

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or under § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information that is material to patentability as defined in 37 C.F.R. § 1.56 that became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application No.)	(Filing Date)	(Status - patented, pending, abandoned)

Appl. No. 09/604,961
Docket No. 1719.0340000

Send Correspondence to:

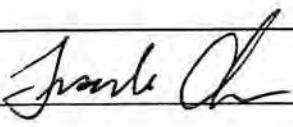
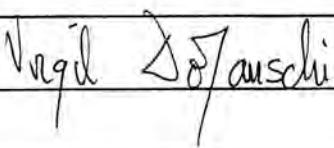
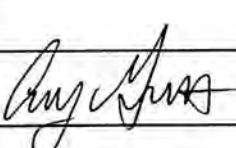
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934



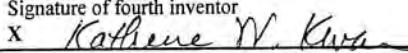
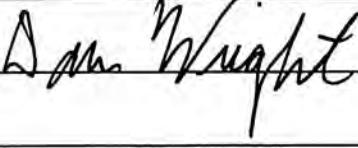
Direct Telephone Calls to:

(202) 371-2600

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor Frank J. CHU		Date x 12/19/00
Signature of sole or first inventor X		
Residence Cupertino, CA		
Citizenship United States of America		
Post Office Address 20889 Greenleaf Drive, Cupertino, CA 95014		
<hr/>		
Full name of second inventor Virgil Patrick DOBJANSCHI		Date x 12/04/2000
Signature of second inventor X		
Residence Fremont, CA		
Citizenship Romania		
Post Office Address 38722 Chimaera Circle, Fremont, CA 94536		
<hr/>		
Full name of third inventor Corey GATES		Date x 12/04/2000
Signature of third inventor X		
Residence Belmont, CA		
Citizenship United States of America		
Post Office Address 20 Cliffside Court, Belmont, CA 94002		
PT0000061		

Appl. No. 09/604,961
Docket No. 1719.0340000

Full name of fourth inventor Katherine W. KWAN	
Signature of fourth inventor 	Date X Dec 4, 2000
Residence San Jose, CA	
Citizenship United States of America	
Post Office Address 1072 Wilmington Avenue, San Jose CA 95129	
<hr/>	
Full name of fifth inventor Daniel W. WRIGHT	
Signature of fifth inventor 	Date X 12 / 18 / 2000
Residence San Jose, CA	
Citizenship United States of America	
Post Office Address 390 Elan Village Lane #218, San Jose, CA 95134	
<hr/>	

P:\USERS\WBLADES\R\Raymond\Millen\17190340000.dec
SKGF Rev. 9/2/98 mac

(Supply similar information and signature for subsequent joint inventors, if any)

PT0000062

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$ 950.00)



Complete if Known

Application Number	09/604,961
Filing Date	June 28, 2000
First Named Inventor	Frank J. CHU
Examiner Name	To be assigned
Group Art Unit	2631
Attorney Docket No.	1719.0340000

METHOD OF PAYMENT (check one)

1. The Commissioner is hereby authorized to charge indicated fees and credit any overpayment to:

Deposit Account Number	19-0036
Deposit Account Name	Sterne, Kessler, Goldstein & Fox P.L.L.C.

Charge Any Additional Fee Required
Under 37 CFR §§ 1.16 and 1.17

Applicant claims small entity status
See 37 CFR 1.27

2. Payment Enclosed: 29844

Check Credit card Money Order Other*

*Charge any deficiencies or credit any overpayments in the fees or fee calculations of Parts 1, 2 and 3 below to Deposit Account No. 19-0036.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101	710	201	355 Utility filing fee <u>710.00</u>
106	320	206	160 Design filing fee
107	490	207	245 Plant filing fee
108	710	208	355 Reissue filing fee
114	150	214	75 Provisional filing fee

SUBTOTAL (1) (\$ 710.00)

2. EXTRA CLAIM FEES

Extra	Fee from below	Fee Paid
Total Claims _____ - 20** = _____ X _____ = _____		
Indep. Claims _____ - 3*** = _____ X _____ = _____		
Multiple Dependent: _____ = _____		

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Entity Fee (\$)	Fee Description
103	18	203	9 Claims in excess of 20
102	80	202	40 Independent claims in excess of 3
104	270	204	135 Multiple dependent claim
108	80	209	40 **Reissue independent claims over original patent
110	18	210	9 **Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 0)

**Or number previously paid, if greater. For Reissues, see above.

3. ADDITIONAL FEES
Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee paid
105	130	205	65 Surcharge - late filing fee or oath	\$130.00	
127	50	227	25 Surcharge - late provisional filing fee or cover sheet		
139	130	139	130 Non-English specification		
147	2,520	147	2,520 For filing a request for ex parte reexamination		
112	920*	112	920* Requesting publication of SIR prior to Examiner action		
113	1,840*	113	1,840* Requesting publication of SIR after Examiner action		
115	110	215	55 Extension for reply within first month	\$110.00	
116	390	216	195 Extension for reply within second month		
117	890	217	445 Extension for reply within third month		
118	1,390	218	695 Extension for reply within fourth month		
128	1,890	228	945 Extension for reply within fifth month		
119	310	219	155 Notice of Appeal		
120	310	220	155 Filing a brief in support of an appeal		
121	270	221	135 Request for oral hearing		
138	1,510	138	1,510 Petition to institute a public use proceeding		
140	110	240	55 Petition to revive - unavoidable		
141	1,240	241	620 Petition to revive - unintentional		
142	1,240	242	620 Utility issue fee (or reissue)		
143	440	243	220 Design issue fee		
144	600	244	300 Plant issue fee		
122	130	122	130 Petitions to the Commissioner		
123	130	123	130 Petitions related to provisional applications		
126	180	126	180 Submission of Information Disclosure Stmt		
581	40	481	40 Recording each patent assignment per property (times number of properties)		
146	710	246	355 Filing a submission after final rejection (37 CFR 1.129(a))		
149	710	249	355 For each additional invention to be examined (37 CFR 1.129(b))		
179	710	279	355 Request for Continued Examination (RCE)		
169	900	169	900 Request for expedited examination of a design application		

Other fee (specify):

Other fee (specify):

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 240.00)

SUBMITTED BY

Complete (if applicable)

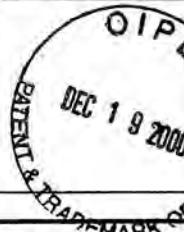
Name (Print/Type)	Raymond Millien	Registration No. (Attorney/Agent)	43,806	Telephone	PT0000063-2600
Signature			Date	12/14/00	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$ 950.00)



Complete if Known

Application Number	09/604,961
Filing Date	June 28, 2000
First Named Inventor	Frank J. CHU
Examiner Name	To be assigned
Group Art Unit	2631
Attorney Docket No.	1719.0340000

METHOD OF PAYMENT (check one)		FEE CALCULATION (continued)																																																																																																																																																																																																																																											
<p>1. <input type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any overpayment to:</p> <p>Deposit Account Number: 19-0036</p> <p>Deposit Account Name: Sterne, Kessler, Goldstein & Fox P.L.L.C.</p> <p><input type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR §§ 1.16 and 1.17</p> <p><input type="checkbox"/> Applicant claims small entity status See 37 CFR 1.27</p>		<p>3. ADDITIONAL FEES</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Large Entity</th> <th style="text-align: left;">Small Entity</th> <th colspan="3" style="text-align: center;">BUREAU</th> <th style="text-align: right;">Fee Description</th> <th style="text-align: right;">Fee paid</th> </tr> <tr> <th>Fee Code</th> <th>Fee (\$)</th> <th>Fee Code</th> <th>Fee (\$)</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>105</td> <td>130</td> <td>205</td> <td>65</td> <td>Surcharge - late filing fee or oath</td> <td></td> <td>\$130.00</td> </tr> <tr> <td>127</td> <td>50</td> <td>227</td> <td>25</td> <td>Surcharge - late provisional filing fee or cover sheet</td> <td></td> <td></td> </tr> <tr> <td>139</td> <td>130</td> <td>139</td> <td>130</td> <td>Non-English specification</td> <td></td> <td></td> </tr> <tr> <td>147</td> <td>2,520</td> <td>147</td> <td>2,520</td> <td>For filing a request for ex parte reexamination</td> <td></td> <td></td> </tr> <tr> <td>112</td> <td>920*</td> <td>112</td> <td>920*</td> <td>Requesting publication of SIR prior to Examiner action</td> <td></td> <td></td> </tr> <tr> <td>113</td> <td>1,840*</td> <td>113</td> <td>1,840*</td> <td>Requesting publication of SIR after Examiner action</td> <td></td> <td></td> </tr> <tr> <td>115</td> <td>110</td> <td>215</td> <td>55</td> <td>Extension for reply within first month</td> <td></td> <td>\$110.00</td> </tr> <tr> <td>116</td> <td>390</td> <td>216</td> <td>195</td> <td>Extension for reply within second month</td> <td></td> <td></td> </tr> <tr> <td>117</td> <td>890</td> <td>217</td> <td>445</td> <td>Extension for reply within third month</td> <td></td> <td></td> </tr> <tr> <td>118</td> <td>1,390</td> <td>218</td> <td>695</td> <td>Extension for reply within fourth month</td> <td></td> <td></td> </tr> <tr> <td>128</td> <td>1,890</td> <td>228</td> <td>945</td> <td>Extension for reply within fifth month</td> <td></td> <td></td> </tr> <tr> <td>119</td> <td>310</td> <td>219</td> <td>155</td> <td>Notice of Appeal</td> <td></td> <td></td> </tr> <tr> <td>120</td> <td>310</td> <td>220</td> <td>155</td> <td>Filing a brief in support of an appeal</td> <td></td> <td></td> </tr> <tr> <td>121</td> <td>270</td> <td>221</td> <td>135</td> <td>Request for oral hearing</td> <td></td> <td></td> </tr> <tr> <td>138</td> <td>1,510</td> <td>138</td> <td>1,510</td> <td>Petition to institute a public use proceeding</td> <td></td> <td></td> </tr> <tr> <td>140</td> <td>110</td> <td>240</td> <td>55</td> <td>Petition to revive - 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<p>* or number previously paid, if greater; For Reissues, see above</p>		<p>SUBMITTED BY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Name (Print/Type)</td> <td>Raymond Millien</td> <td>Registration No. (Attorney/Agent)</td> <td>43,806</td> <td>Telephone</td> <td colspan="2">PT0000064 202-371-2600</td> </tr> <tr> <td>Signature</td> <td colspan="3"></td> <td>Date</td> <td colspan="2">12/19/00</td> </tr> </table>					Name (Print/Type)	Raymond Millien	Registration No. (Attorney/Agent)	43,806	Telephone	PT0000064 202-371-2600		Signature				Date	12/19/00																																																																																																																																																																																																																										
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STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

ATTORNEYS AT LAW

1100 NEW YORK AVENUE, N.W. • WASHINGTON, D.C. 20005-3934

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 TARJA H. NAUKKARINEN**

*BAR OTHER THAN D.C.

**REGISTERED PATENT AGENTS



February 6, 2001

WRITER'S DIRECT NUMBER:

(202) 789-5506

INTERNET ADDRESS:

RMILLIEN@SKGF.COM

Commissioner for Patents
 Washington, D.C. 20231

Re: U.S. Utility Patent Application
 Appl. No. 09/604,961; Filed: June 28, 2000
 For: **Hybrid Server Architecture for Mixing
 and Non-Mixing Client Conferencing**
 Inventors: CHU *et al.*
 Our Ref: 1719.0340000

Sir:

Transmitted herewith for appropriate action are the following documents:

1. SKGF Transmittal Letter (*in duplicate*);
2. Original Power of Attorney executed from Assignee;
3. Original Certificate Under 37 C.F.R. § 3.73(b), along with a copy of the Assignment; and
4. One (1) return postcard.

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STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Commissioner for Patents
February 6, 2001
Page 2

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036. A duplicate copy of this letter is enclosed.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien
Attorney for Applicants
Registration No. 43,806

RVM:dcw
Enclosures

P:\USERS\DWRIGHT\General\RAYMOND V. MILLIEN\POA-SKGF-TRANS-1719.0340000
SKGF Rev. 4/27/00 mac

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POWER OF ATTORNEY FROM ASSIGNEE



HearMe, a corporation of California, having a principal place of business at 685 Clyde Avenue, Mountain View, California 94043, is assignee of the entire right, title and interest for the United States of America (as defined in 35 U.S.C. § 100), by reason of an Assignment to the Assignee executed on: 1) 12/8/00; 2)12/4/00; 3)12/4/00; 4) 12/4/00; and 5) 12/18/00 of an invention known as Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing (Attorney Docket No. 1719.0340000), which is disclosed and claimed in a patent application of the same title by the inventor(s) 1) Frank J. Chu, 2) Virgil Patrick Dobjanschi; 3) Corey Gates; 4) Katherine W. Kwan; and 5) Daniel W. Wright (said application filed on June 28, 2000 at the U.S. Patent and Trademark Office, having Application Number 09/604,961).

The Assignee hereby appoints the following U.S. attorneys to prosecute this application and any continuation, divisional, continuation-in-part, or reissue application thereof, and to transact all business in the U.S. Patent and Trademark Office connected therewith: Robert Greene Sterne, Esq., Reg. No. 28,912; Edward J. Kessler, Esq., Reg. No. 25,688; Jorge A. Goldstein, Esq., Reg. No. 29,021; Samuel L. Fox, Esq., Reg. No. 30,353; David K.S. Cornwell, Esq., Reg. No. 31,944; Robert W. Esmond, Esq., Reg. No. 32,893; Tracy-Gene G. Durkin, Esq., Reg. No. 32,831; Michele A. Cimbala, Esq., Reg. No. 33,851; Michael B. Ray, Esq., Reg. No. 33,997; Robert E. Sokohl, Esq., Reg. No. 36,013; Eric K. Steffe, Esq., Reg. No. 36,688; Michael Q. Lee, Esq., Reg. No. 35,239; Steven R. Ludwig, Esq., Reg. No. 36,203; John M. Covert, Esq., Reg. No. 38,759; and Linda E. Alcorn, Esq., Reg. No. 39,588. The Assignee hereby grants said attorneys the power to insert on this Power of Attorney any further identification that may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office.

Send correspondence to:

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
U.S.A.

Direct phone calls to 202-371-2600.

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FOR: HearMe

SIGNATURE: X James R. Schmidt

BY: X James R. Schmidt

TITLE: X Chief Technology Officer

DATE: X 16-JAN-2001

Certificate Under 37 C.F.R. § 3.73(b)Applicant/Patent Owner: Chan et al.Application No./Patent No.: 09/604,961Filed/Issue Date: June 28, 2000Entitled: Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing

HearMe, a Corporation
 (Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. the assignee of the entire right, title, and interest, or
2. an assignee of an undivided part interest

in the patent application/patent identified above by virtue of either:

A. An Assignment from the inventor(s) of the patent application/patent identified above. The assignment will be recorded in the Patent and Trademark Office under separate copy, a copy thereof is attached.

OR

B. A chain of title from the inventor(s) of the patent application/patent identified above to the current assignee as shown below:

1. From: _____ To: _____
 The document was recorded in the Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____
 The document was recorded in the Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____
 The document was recorded in the Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

Copies of assignments or other documents in the chain of title are attached.

[NOTE: A separate copy (*i.e.*, the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the PTO. See MPEP 302-302.8)

The undersigned (whose title is supplied below) is empowered to act on behalf of the assignee.

Date: X 16-JAN-01

Name: X James R. Schmidt

Title: X Chief Technology Officer

Signature: X James R. Schmidt 16-JAN-01

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ASSIGNMENT

**DO NOT FORWARD
TO ASSIGNMENT BRANCH
NOT FOR RECORDATION**

In consideration of the sum of One Dollar (\$1.00) or equivalent and other good and valuable consideration paid to each of the undersigned inventor(s): **1) Frank J. CHU; 2) Virgil Patrick DOBJANSCHI; 3) Corey GATES; 4) Katherine W. KWAN; and 5) Daniel W. WRIGHT**, the undersigned inventor(s) hereby sell(s) and assign(s) to **HearMe, 685 Clyde Avenue, Mountain View, CA 94043** (the Assignee) his/her entire right, title and interest, including the right to sue for past infringement and to collect for all past, present and future damages:

check applicable box(es) for the United States of America (as defined in 35 U.S.C. § 100),
 and throughout the world,

(a) in the invention(s) known as **Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing** for which application(s) for patent in the United States of America has (have) been executed by the undersigned on 1) 12/8/00; 2) 12/4/00; 3) 12/4/00; 4) 12/4/00; and 5) 12/18/00 (also known as United States Application No. 09//604,961, filed June 28, 2000), in any and all applications thereon, in any and all Letters Patent(s) therefor, and

MBR
12/19/00

(b) in any and all applications that claim the benefit of the patent application listed above in part (a), including continuing applications, reissues, extensions, renewals and reexaminations of the patent application or Letters Patent therefor listed above in part (a), to the full extent of the term or terms for which Letters Patents issue, and

(c) in any and all inventions described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals and reexaminations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

The undersigned inventor(s) agree(s) to execute all papers necessary in connection with the application(s) and any continuing (continuation, divisional, or continuation-in-part), reissue, reexamination or corresponding application(s) thereof and also to execute separate assignments in connection with such application(s) as the Assignee may deem necessary or expedient.

The undersigned inventor(s) agree(s) to execute all papers necessary in connection with any interference or patent enforcement action (judicial or otherwise) related to the application(s) or any continuing (continuation, divisional, or continuation-in-part), reissue or reexamination application(s) thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference or patent enforcement action.

The undersigned inventor(s) hereby represent(s) that he/she has full right to convey the entire interest herein assigned, and that he/she has not executed, and will not execute, any agreement in conflict therewith.

The undersigned inventor(s) hereby grant(s) Robert Greene Sterne, Esquire, Registration No. 28,912; Edward J. Kessler, Esquire, Registration No. 25,688; Jorge A. Goldstein, Esquire, Registration No. 29,021; Samuel L. Fox, Esquire, Registration No. 30,353; David K.S. Cornwell, Esquire, Registration No. 31,944; Robert W.

PT0000069

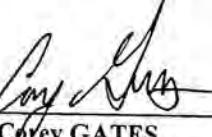
DO NOT FORWARD
TO ASSIGNMENT BRANCH
NOT FOR RECORDATION

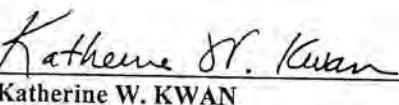
Esmond, Esquire, Registration No. 32,893; Tracy-Gene G. Durkin, Esquire, Registration No. 32,831; Michele A. Cimbala, Esquire, Registration No. 33,851; Michael B. Ray, Esquire, Registration No. 33,997; Robert E. Sokohl, Esquire, Registration No. 36,013; Eric K. Steffe, Esquire, Registration No. 36,688; Michael Q. Lee, Esquire, Registration No. 35,239; Steven R. Ludwig, Esquire, Registration No. 36,203; John M. Covert, Esquire, Registration No. 38,759; and Linda E. Alcorn, Esquire, Registration No. 39,588; all of STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C., 1100 New York Avenue, N.W., Suite 600, Washington, D.C. 20005-3934, power to insert in this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, executed by the undersigned inventor(s) on the date opposite his/her name.

Date: 12/04/00 Signature of Inventor: 
 1) Frank J. CHU

Date: 12/04/2000 Signature of Inventor: 
 2) Virgil Patrick DOBJANSCHI

Date: 12/04/2000 Signature of Inventor: 
 3) Corey GATES

Date: 12/04/2000 Signature of Inventor: 
 4) Katherine W. KWAN

Date: 12/18/2000 Signature of Inventor: 
 5) Daniel W. WRIGHT

PT0000070

DUPPLICATE

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2600 MAIL ROOM

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
ATTORNEYS AT LAW
1100 NEW YORK AVENUE, N.W. • WASHINGTON, D.C. 20005-3934
PHONE: (202) 371-2600 • FACSIMILE: (202) 371-2540 • www.skgf.com

ROBERT GREENE STERNE
EDWARD J. KESSLER
JORGE A. GOLDSTEIN
SAMUEL L. FOX
DAVID K.S. CORNWELL
ROBERT W. EDMOND
TRACY-GENE G. DURKIN
MICHELE A. CIMBALA
MICHAEL B. RAY
ROBERT E. SOKOHL
ERIC K. STEFFE
MICHAEL Q. LEE

STEVEN R. LUDWIG
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ROBERT C. MILLONIG
MICHAEL V. MESSINGER
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DONALD R. MCPHAIL
PATRICK E. GARRETT
STEPHEN G. WHITESIDE
JEFFREY T. HELVEY
HEIDI L. KRAUS

JEFFREY R. KURIN
RAYMOND MILLIEN
PATRICK D. O'BRIEN
LAWRENCE B. BUGAISKY
CRYSTAL D. SAYLES
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ANDREA J. KARAGE**
NANCY J. LEITH**
ELIZABETH J. HAANES**
MARK P. TERRY**
TARJA H. NAUKKARINEN**

*BAR OTHER THAN D.C.
**REGISTERED PATENT AGENTS



February 6, 2001

WRITER'S DIRECT NUMBER:
(202) 789-5506
INTERNET ADDRESS:
RMILLIEN@SKGF.COM

Mr. Jim Schmidt
Chief Technology Officer
HearMe
685 Clyde Avenue
Mountain View, CA 94043

Re: U.S. Utility Patent Application
Appl. No. 09/604,961; Filed: June 28, 2000
For: Hybrid Server Architecture for Mixing
and Non-Mixing Client Conferencing
Inventors: CHU *et al.*
Your Ref: Audio-P004
Our Ref: 1719.0340000

Dear Jim:

We are pleased to report the filing in the U.S. Patent and Trademark Office of the following documents:

1. SKGF Transmittal Letter;
2. Original Power of Attorney executed from Assignee;
3. Original Certificate Under 37 C.F.R. § 3.73(b), along with a copy of the Assignment; and
4. One (1) return postcard.

PT0000071

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Mr. Jim Schmidt
February 6, 2001
Page 2

Copies of these documents are enclosed for your records. Please review them and contact us immediately if you have any comments.

Please be reminded that the duty of disclosure continues throughout the entire patent application process and ends only with the actual issuance of a patent. Therefore, if anyone substantively involved in the patent application process becomes aware of information that might be considered material, please forward it to us immediately.

We will keep you informed of any further developments in this case. If you have any questions, do not hesitate to contact us.

Very truly yours,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Raymond Millien

RVM:dcw
Enclosures

P:\USERS\DWRIGHT\General\RAYMOND V. MILLIEN\POA-REPORTING-LTR-1719.0340000
SKGF Rev. 10/4/00 mac

PT0000072

Attorney Docket No.: PT-034 (1719.0340000)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

5
AFC 3/27

Applicant :	Frank J. Chu <i>et al.</i>	Group :	2664
Serial No. :	09/604,961	Examiner :	Not Yet Assigned
Filed :	June 28, 2000		
Title :	Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing		



REVOCATION AND POWER OF ATTORNEY

RECEIVED

MAR 14 2002

Technology Center 2600

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

As an officer of Paltalk Holdings, Inc., owner of the entire right, title and interest in, to and under the invention described and claimed in the above-identified patent application, I hereby revoke all previous powers of attorney and appoint the following attorneys, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith Daniel A. Devito (32,125), Edward V. Filardi (25,757), David W. Hansen (38,910), Constance S. Huttner (35,903), Ronald S. Laurie (25,431), Robert B. Smith (28,538), Robert B. Beyers (46,552), Meir Y. Blonder (40,517), Ian R. Blum (42,336), John L. Dauer, Jr. (39,953), Jose Esteves (41,011), Michael D. Fabiano (44,675), Stacey J. Farmer (42,526), Di Jiang-Schuerger (44,806), Frederick D. Kim (38,513), Thomas R. Lane (42,718), Daniel J. Lin (47,750), Douglas R. Nemec (41,219), Guy Perry (46,194), Constance F. Ramos (47,883), Andrew F. Strobert (35,375), Todd J. Tiberi (37,455), Joseph Yang (41,387), and Matthew B. Zisk (45,257), all of Skadden, Arps, Slate, Meagher & Flom LLP, whose address is Four Times Square, New York, NY 10036.

Please direct all future correspondence to Skadden, Arps, Slate, Meagher & Flom LLP, Four Times Square, New York, NY 10036, and direct all phone calls to Skadden, Arps et al. at (212) 735-3000.

Respectfully submitted,

Date: February, 2002By:  2/4/02
Name: Robert Lee (print name)Title: PRESIDENT (print title)
PT0000073

Attorney Docket No.: PT-034 (1719.0340000)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Frank J. Chu et al.

Group : 2664

Serial No. 09/604,961

Examiner : Not Yet Assigned

Filed MAR 18 2002 June 28, 2000

Title Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing

CERTIFICATE OF MAILING

I hereby certify that this paper and all enclosures referred to therein are being deposited with the United States Postal Service as First Class Mail, with sufficient postage in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231 on Feb. 15, 2002.

Name of Person Mailing: Josephine Hardy

Signature of Person Mailing

TRANSMITTAL OF REVOCATION AND POWER OF ATTORNEY

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed please find a Revocation and Power of Attorney in the above-identified application which revokes all previous powers of attorney and appoints the attorneys at Skadden, Arps, Slate, Meagher & Flom LLP to conduct all business in the Patent and Trademark Office connected therewith.

Accordingly, all correspondence should be addressed to Skadden, Arps, Slate, Meagher & Flom LLP, Four Times Square, New York, NY 10036, telephone number (212) 735-3000.

Respectfully submitted,

By:

Andrew F. Strobert Reg. No. 35,375
Skadden, Arps, Slate, Meagher & Flom LLP
Four Times Square
New York, NY 10036
(212) 735-3000

Date: February 15, 2002

Enclosure

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MAR 10 2002

Technology Center 2600



COPY OF PAPER
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UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/604,961	06/28/2000	Frank J. Chu	1719.0340000

CONFIRMATION NO. 6370



OC000000007728695

SKADDEN ARPS, ET AL.
MEAGHER & FLOM LLP
FOUR TIMES SQUARE
1100 New York Avenue N W
NEW YORK, NY 10036

Date Mailed: 03/27/2002

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/08/2002.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

APRIL Y CHEEVEES
2600 (703) 306-4140

OFFICE COPY

PT0000075



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/604,961	06/28/2000	Frank J. Chu	1719.0340000

CONFIRMATION NO. 6370



OC00000007728615

Sterne Kessler Goldstein & Fox PLLC
Suite 600
1100 New York Avenue N W
Washington, DC 20005-3934

Date Mailed: 03/27/2002

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/08/2002.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

APRIL Y CHEEVEES
2600 (703) 306-4140

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PT0000076



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Frank J. Chu *et al.* Group : 2664
 Serial No. : 09/604,961 Examiner : Not Yet Assigned
 Filed : June 28, 2000
 Title : Hybrid Server Architecture for Mixing and Non-Mixing Client Conferencing

6683858

CERTIFICATE OF MAILING

I hereby certify that this paper and all enclosures referred to therein are being deposited with the United States Postal Service as First Class Mail, with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Arlington, VA 22313-1450 on May 15, 2003.

Name of Person Mailing: Josephine Hardy

Josephine Hardy
Signature of Person Mailing

REQUEST FOR STATUS

Commissioner for Patents
 P.O. Box 1450
 Arlington, VA 22313-1450

RECEIVED

MAY 21 2003

Technology Center 2600

Sir:

The above-identified application was filed on June 28, 2000 and no Office Action on the merits has been received. Applicants respectfully request information concerning the status of the application.

Any questions concerning this application may be directed to the undersigned attorney for Applicant at the address and phone number indicated.

- The Commissioner is hereby authorized to charge payment of any fee required in connection with this Request to Skadden, Arps, Slate, Meagher & Flom LLP Deposit Account No. 19-2385. (Please reference Attorney Docket No. PT-034).

Respectfully submitted,

AMW

Date: May 15, 2003

By:

Andrew F. Strobert Reg. No. 35,375
 Skadden, Arps, Slate, Meagher & Flom LLP
 Four Times Square
 New York, NY 10036
 (212) 735-3000 TC 2600 CSO
 STATUS RESPONSE DATE

PT0000077

JUN 16 2003

Initials: *AM*

Initials: *AM*

TC 2600 CSO
 STATUS INQUIRY
 RECEIVED
 MAY 22 2003



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 10/03/2003

SKADDEN ARPS, ET AL.
 MEAGHER & FLOM LLP
 FOUR TIMES SQUARE
 1100 New York Avenue N W
 NEW YORK, NY 10036

EXAMINER

PHAM, BRENDA H

ART UNIT

PAPER NUMBER

2664

7

DATE MAILED: 10/03/2003

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,961	06/28/2000	Frank J. Chu	1719.0340000	6370

TITLE OF INVENTION: HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$0	\$1330	01/05/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

Applicant claims SMALL ENTITY status.
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

PT0000078

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(703) 746-4000**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

7590

10/03/2003

SKADDEN ARPS, ET AL.
MEAGHER & FLOM LLP
FOUR TIMES SQUARE
1100 New York Avenue N W
NEW YORK, NY 10036

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,961	06/28/2000	Frank J. Chu	1719.0340000	6370

TITLE OF INVENTION: HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$0	\$1330	01/05/2004
EXAMINER	ART UNIT	CLASS-SUBCLASS			
PHAM, BRENDA H	2664	370-263000			

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

"Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent); individual corporation or other private group entity government

4a. The following fee(s) are enclosed:

4b. Payment of Fee(s):

Issue Fee
 Publication Fee
 Advance Order - # of Copies _____

A check in the amount of the fee(s) is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized to charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)	(Date)
<p>NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.</p>	
<p>This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.</p>	
PT0000079	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,961	06/28/2000	Frank J. Chu	1719.0340000	6370
7590	10/03/2003			
EXAMINER				
PHAM, BRENDA H				
ART UNIT		PAPER NUMBER		
2664				
DATE MAILED: 10/03/2003				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
 (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 758 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 758 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,961	06/28/2000	Frank J. Chu	1719.0340000	6370
7590	10/03/2003		EXAMINER	
SKADDEN ARPS, ET AL. MEAGHER & FLOM LLP FOUR TIMES SQUARE 1100 New York Avenue NW NEW YORK, NY 10036			PHAM, BRENDA H	
			ART UNIT	PAPER NUMBER
			2664	
DATE MAILED: 10/03/2003				

Notice of Fee Increase on October 1, 2003

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after October 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on October 1, 2003. See Revision of Patent Fees for Fiscal Year 2004; Final Rule, 68 Fed. Reg. 41532, 41533, 41534 (July 14, 2003).

The current fee schedule is accessible from (<http://www.uspto.gov/main/howtofees.htm>).

If the fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due" but not the correct amount in view of the fee increase, a "Notice of Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice of Pay Balance of Issue Fee," if the response to the Notice of Allowance is to be filed on or after October 1, 2003 (or mailed with a certificate of mailing on or after October 1, 2003), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously-paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Effective October 1, 2003, 37 CFR 1.18 is amended by revising paragraphs (a) through (c) to read as set forth below.

Section 1.18 Patent post allowance (including issue) fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (Sec. 1.27(a))..... \$665.00
 By other than a small entity..... \$1,330.00

(b) Issue fee for issuing a design patent:

By a small entity (Sec. 1.27(a))..... \$240.00
 By other than a small entity..... \$480.00

(c) Issue fee for issuing a plant patent:

By a small entity (Sec. 1.27(a))..... \$320.00
 By other than a small entity..... \$640.00

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability	Application No. 09/604,961 Examiner Brenda Pham	Applicant(s) CHU ET AL. Art Unit 2664
-------------------------------	--	--

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to 6/2000. *rph*
2. The allowed claim(s) is/are 1-13.
3. The drawings filed on _____ are accepted by the Examiner.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f)
- a) All b) Some* c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

5. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- (a) The translation of the foreign language provisional application has been received.
6. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. CORRECTED DRAWINGS must be submitted.
- (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) hereto or 2) to Paper No. _____.
- (b) including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
- (c) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- 1 Notice of References Cited (PTO-892)
 2 Notice of Informal Patent Application (PTO-152)
 3 Notice of Draftsperson's Patent Drawing Review (PTO-948)
 4 Interview Summary (PTO-413), Paper No. _____.
 5 Information Disclosure Statements (PTO-1449), Paper No. _____.
 6 Examiner's Amendment/Comment
 7 Examiner's Statement of Reasons for Allowance
 8 Examiner's Comment Regarding Requirement for Deposit
 9 Other
 of Biological Material

Application/Control Number: 09/604,961
Art Unit: 2664

Page 2

REASONS FOR ALLOWANCE

1. Claims 1-13 allowed.
2. The following is an examiner's statement of reasons for allowance: the prior art made of record does not teach the method, apparatus and computer program product include the steps of receiving audio packets from each client, determining which are active speakers and forming an active speakers list. Then, the clients are divided into two categories—those have the capability to mix multiple audio streams and those do not. For those clients that can mix, the server multiplexes the packets of audio data received from each client on the active speakers list into a multiplexed stream. For those clients that cannot mix, the server mixes the packets of audio data received from each client on the active speakers list into one combined packet. The method further include the step of send the multiplexed stream to each of the clients that can mix, and send the combined packet to each of the clients that cannot mix.
3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Application/Control Number: 09/604,961
Art Unit: 2664

Page 3

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure

Oran (US 6,418,125 B1) discloses a processor selects which audio packets and what speaker information to retain in memory. The processor determines which of the selected audio-packets to store in memory and mix together to produce an audio output signal by determining from the speaker information which of the multiple speakers are actively talking and which speaker has not actively talked for the longest period of time.

Fukuoka et al (US 5,914,940) discloses a multipoint video conference controlling method and system capable of synchronizing video and audio packets.

5. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Fax to:

(703) 872-9314, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA., Sixth Floor (Receptionist)

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Pham whose telephone number is (703) 308-0148. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin, can be reached on (703) 305-4366.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Brenda Pham
September 18, 2003

Form PTO-948 (Rev. 03/03)
Application No.

09/604961

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

The drawing(s) filed (insert date) 6/28/00 are:

- A. approved by the Draftsperson under 37 CFR 1.84 or 1.152.
 B. objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons indicated below. Corrected drawings are required.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink or Color (3 sets required).

Color drawings are not acceptable until petition is granted. Fig(s) _____

Pencil and non black ink not permitted. Fig(s) _____

2. PHOTOGRAPHS. 37 CFR 1.84(b)

1 full-tone set is required. Fig(s) _____

Photographs may not be mounted. 37 CFR 1.84(e)

Photographs must meet paper size requirements of 37 CFR 1.84(f). Fig(s) _____

Poor quality (half-tone). Fig(s) _____

3. TYPE OF PAPER. 37 CFR 1.84(e)

Paper not flexible, strong, white, and durable. Fig(s) _____

Erasures, alterations, overwritings, interlineations, folds, copy machine marks not accepted. Fig(s) _____

4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:

21.0 cm by 29.7 cm (DIN size A4) or

21.6cm by 27.9cm (8 1/2x 11 inches)

All drawing sheets not the same size.

Sheet(s) _____

Drawings sheets not an acceptable size. Fig(s) _____

5. MARGINS. 37 CFR 1.84(g): Acceptable margins:

Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm

Margins not acceptable. Fig(s) 4

Top (T) Left (L)

Right (R) Bottom (B)

6. VIEWS. 37 CFR 1.84(h)

REMINDER: Specification may require revision to correspond to drawing changes, e.g., if Fig. 1 is changed to Fig. 1A, Fig. 1B and Fig. 1C, etc., the specification, at the Brief Description of the Drawings, must likewise be changed.

Views not labeled separately or properly. Fig(s) _____

7. SECTIONAL VIEWS. 37 CFR 1.84(h)(3)

Sectional designation should be noted with Arabic or Roman numbers. Fig(s) _____

8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)

Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Fig(s) _____

9. SCALE. 37 CFR 1.84(k)

Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction. Fig(s) _____

10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)

Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (poor line quality). Fig(s) _____

11. SHADING. 37 CFR 1.84(m)

Solid black areas pale. Fig(s) _____

Solid black shading not permitted. Fig(s) _____

12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)

Numbers and reference characters not plain and legible. Fig(s) _____

Figure legends are poor. Fig(s) _____

Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(1) Fig(s) _____

English alphabet not used. 37 CFR 1.84(p)(2) Fig(s) _____

Numbers, letters and reference characters must be at least 32 cm (1 1/8 inch) in height. 37 CFR 1.84(p)(3). Fig(s) _____

13. LEAD LINES. 37 CFR 1.84(q)

Lead lines missing. Fig(s) _____

14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t)

Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Sheet(s) _____

15. NUMBERING OF VIEWS. 37 CFR 1.84(u)

Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) _____

16. DESIGN DRAWINGS. 37 CFR 1.152

Surface shading shown not appropriate. Fig(s) _____

Solid black surface shading is not permitted except when used to represent the color black as well as color contrast. Fig(s) _____

COMMENTS:

Reviewer _____

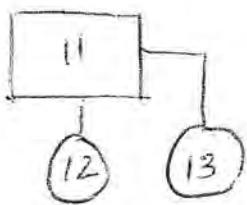
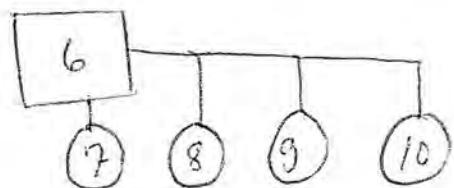
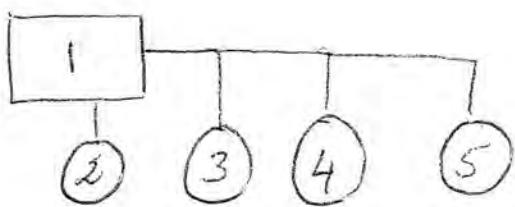
If you have questions, call (703) 305-8404.

Q. Q

Date _____

10/2/03

Attachment to Paper No. _____



Notice of References Cited		Application/Control No. 09/604,961	Applicant(s)/Patent Under Reexamination CHU ET AL.	
Examiner Brenda Pham		Art Unit 2664	Page 1 of 1	

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,418,125 B1	07-2002	Oran	370/266
	B	US-5,914,940	06-1999	Fukuoka et al	370/263
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

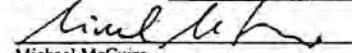
*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
 Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



Appl. No. : 09/604,961
 Applicant : Frank J. Chu
 Filed : June 28, 2000
 TC/A.U. : 2664
 Examiner : Pham, Brenda H
 Docket No. : 1719.0340000 (PT-034)
 Customer No. : 26137
 Conf. No. : 6370

CERTIFICATE OF MAILING

I hereby certify that this paper and all enclosures referred to therein are being deposited with the United States Postal Service as First Class Mail, with sufficient postage in an envelope addressed to the Commissioner for Patents, MS Issue Fee, P.O. Box 1450, Alexandria, VA 22313-1450 on November 18, 2003.


Michael McGuire

Commissioner for Patents
 MS Issue Fee
 P.O. Box 1450
 Alexandria VA 22313-1450

SUBMISSION OF FORMAL DRAWINGS

Sir:

Submitted herewith is one sheet of formal drawings in the above-identified application in response to a Notice of Draftsperson's Drawing Review accompanying the Notice of Allowability mailed October 3, 2003.

No fee is believed to be required for this submission. If there is a fee, however, please charge such fee to Skadden, Arps, Slate, Meagher & Flom LLP Deposit Account No. 19-2385

Respectfully submitted,

Skadden, Arps, Slate, Meagher & Flom LLP

By 
 Andrew F. Strobert Reg. No. 35,375
 Guy Perry Reg. No. 46,194
 Tel.: 212-735-3000

Enclosures



09604961

Computer System 400

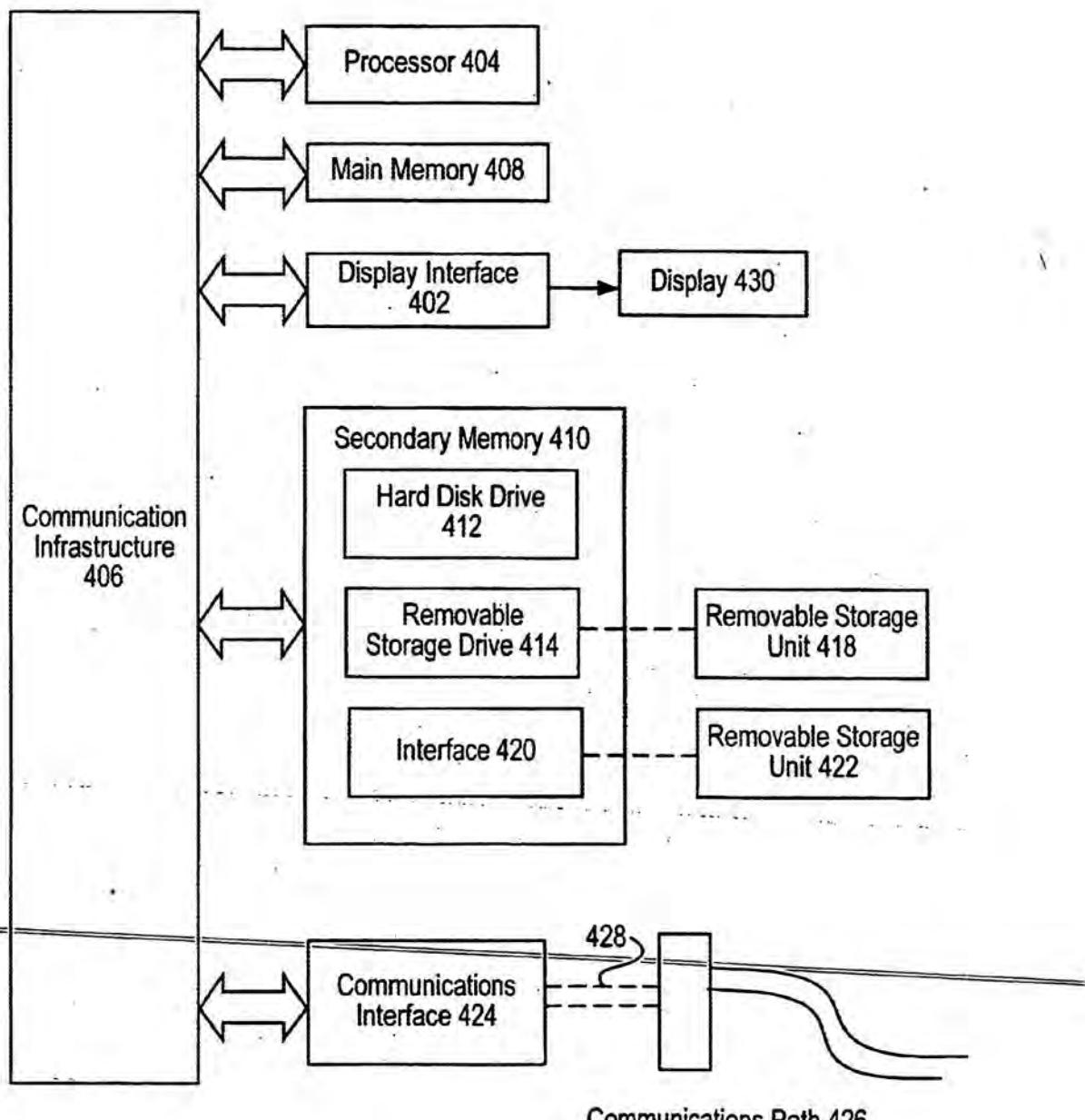


FIG. 4

PT0000089

Part B - FEE(S) TRANSMITTAL

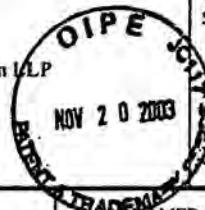
Complete and mail this form, together with all applicable fees, to: Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

B7
b7c

Mailing Instructions: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the patent, advance orders and notifications of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

Current Correspondence Address:

PATENT DEPARTMENT
Skadden, Arps, Slate, Meagher & Flom LLP
Four Times Square
New York, NY 10036
Customer Number: 21637

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on November 18, 2003.

Name of Person Mailing: Michael McGuire

Signature of Person Mailing

Note: This certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,961	6/28/2000	Frank J. Chu	1719.0340000 (PT-034)	6370

TYPE OF INVENTION:

HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING

APPLICATION TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEES DUE	DATE DUE
nonprovisional	NO	\$1,330	\$0	\$1330	1/5/2004
EXAMINER	ART UNIT	CLASS-SUBCLASS	If the SMALL ENTITY is shown as NO: A. Pay TOTAL FEE(S) DUE shown above, or B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and ½ the ISSUE FEE shown above		
Pham, Brenda H	2664	370-263000	<input checked="" type="checkbox"/> Applicant claims SMALL ENTITY status. See 37 CFR 1.27.		

Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.

- Change of correspondence address (or Change of Correspondence form PTO/SB/122 attached).
- "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47 attached).

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

09604961 Skadden, Arps, Slate
Meagher & Flom LLP

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ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type):

A) NAME OF ASSIGNEE:
Paltalk Holdings, Inc.

4a. The following fees are enclosed:

- Issue Fee
- Publication Fee
- Advanced Order - # of copies 5

09604961 09604961

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B) RESIDENCE: (City & State or Country) New York, NY

4b. Payment of Fee(s):

- A check in the amount of the fee(s) is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Commissioner is hereby authorized to charge the required fee(s), or credit any overpayment, to Deposit Account No. 19-2385 (enclose an extra copy of this form).

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Please Note: Unless an assignee is identified in Block 3, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

Please check the appropriate assignee category indicated below:

- Individual corporation or other private group entity government

The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee and Publication fee (if any) or to re-apply any previously filed Issue Fee to the application identified above.

Note: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

Authorized signature) (Reg. No.) (Date)

Andrew Strobert 35,375 November 18, 2003

TRANSMIT THIS FORM WITH FEE(S)

OL-85 (Modified)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/604,961	06/28/2000	Frank J. Chu	1719.0340000

SKADDEN ARPS, ET AL.
 MEAGHER & FLOM LLP
 FOUR TIMES SQUARE
 1100 New York Avenue N W
 NEW YORK, NY 10036



CONFIRMATION NO. 6370
POWER OF ATTORNEY NOTICE



OC000000061298960

Date Mailed: 05/16/2013

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/08/2013.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/rmtturner myles/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



PT0000092



US006683858B1

(12) **United States Patent**
Chu et al.

(10) **Patent No.:** US 6,683,858 B1
(b4) **Date of Patent:** Jan. 27, 2004

(54) **HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING**

6,418,125 B1 * 7/2002 Oran 370/266

* cited by examiner

(75) Inventors: **Frank J. Chu**, Cupertino, CA (US); **Virgil Patrick Dobjanschi**, Fremont, CA (US); **Corey Gates**, Belmont, CA (US); **Katherine W. Kwan**, San Jose, CA (US); **Daniel W. Wright**, San Jose, CA (US)

(73) Assignee: **Paltalk Holdings, Inc.**, New York, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 758 days.

(21) Appl. No.: **09/604,961**

(22) Filed: **Jun. 28, 2000**

(51) Int. Cl.⁷ **H04L 12/16**

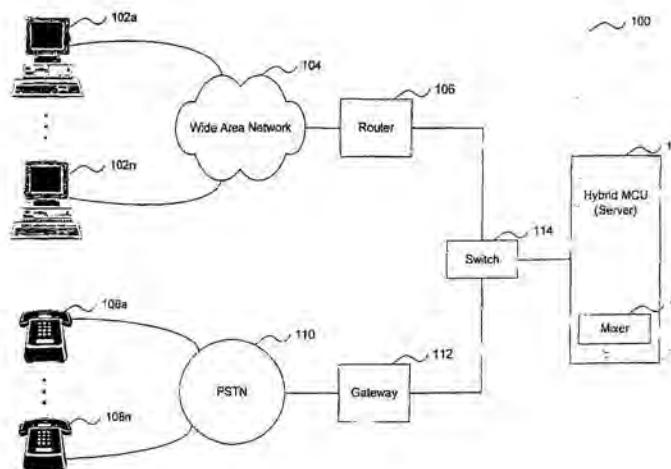
(52) U.S. Cl. **370/263; 379/202.01**

(58) Field of Search 370/260, 261, 370/262, 263, 265, 266, 352-356; 379/158, 202.01

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,914,940 A * 6/1999 Fukuoka et al. 370/263

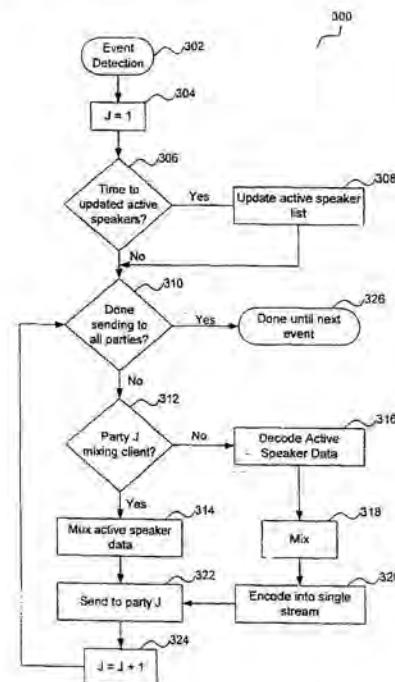


*Primary Examiner—Ajit Patel
Assistant Examiner—Brenda Pham
(74) Attorney, Agent, or Firm—Skadden, Arps, Slate, Meagher & Flom LLP*

(57) **ABSTRACT**

A system, method and computer program product which allows both mixing (e.g., PC-based) and non-mixing (e.g., phone-based) clients to participate in a single audio conference. The system includes a hybrid multi-point control unit (i.e., conferencing server) that performs mixing for phone-based clients and multiplexing for PC-based clients. The method and computer program product determines which clients have the capability to mix multiple audio streams and which do not. For those clients capable of mixing, the server multiplexes the packets of audio data received from each client on the active speakers list into a multiplexed stream. For those clients that are not capable of mixing, the server mixes the packets of audio data received from each client on the active speakers list into one combined packet.

13 Claims, 4 Drawing Sheets



PT0000093

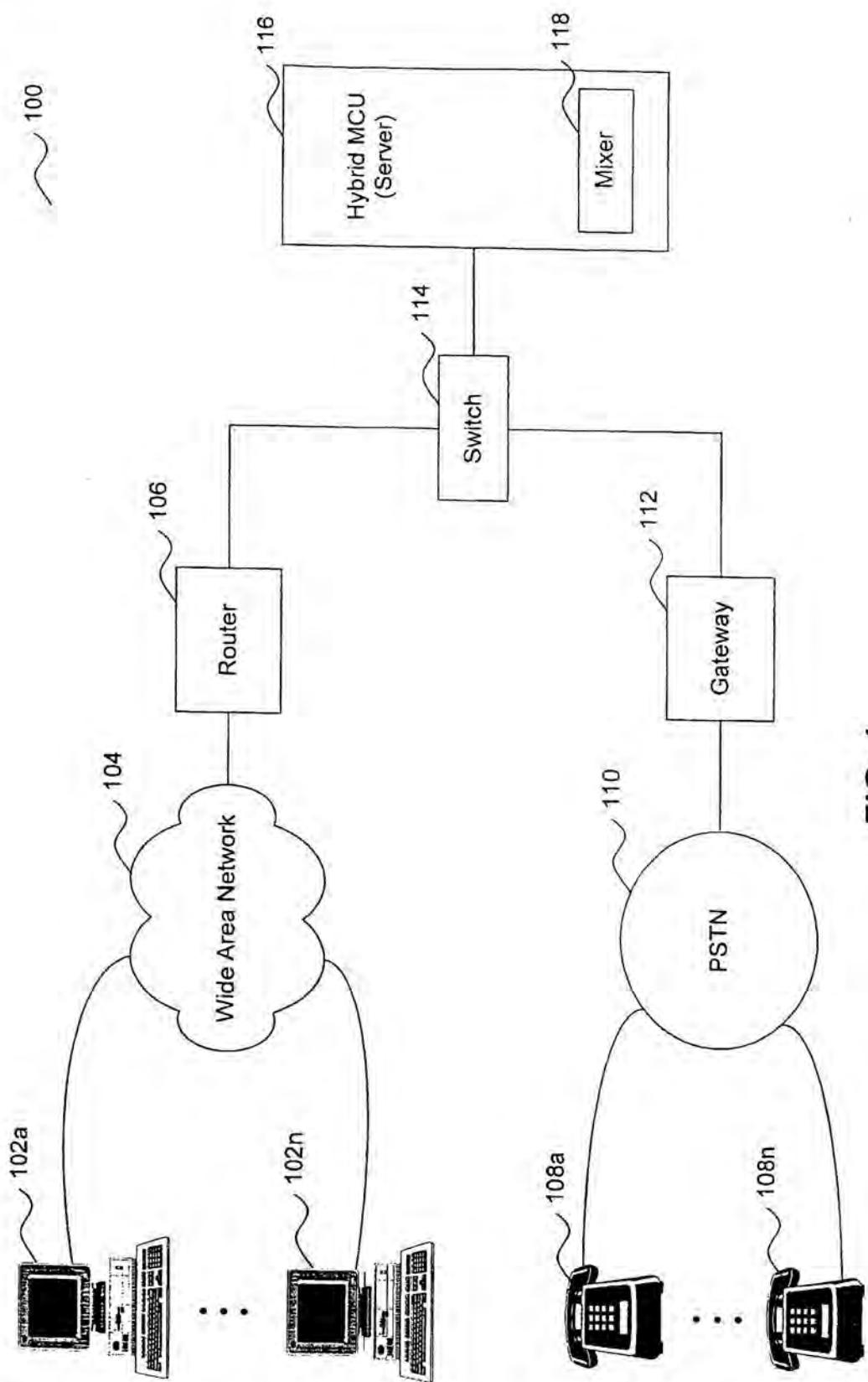


FIG. 1

PT0000094

U.S. Patent

Jan. 27, 2004

Sheet 2 of 4

US 6,683,858 B1

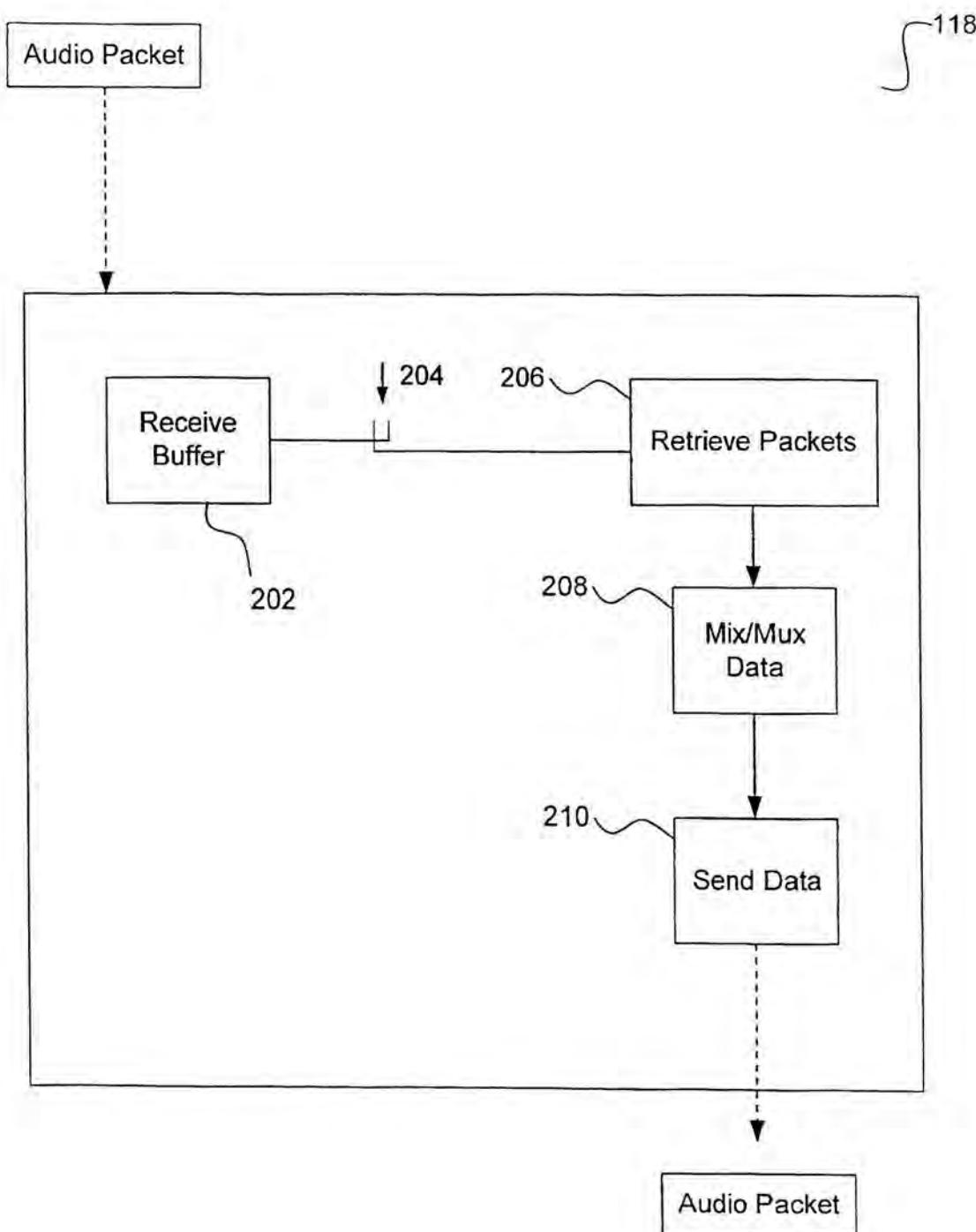


FIG. 2

PT0000095

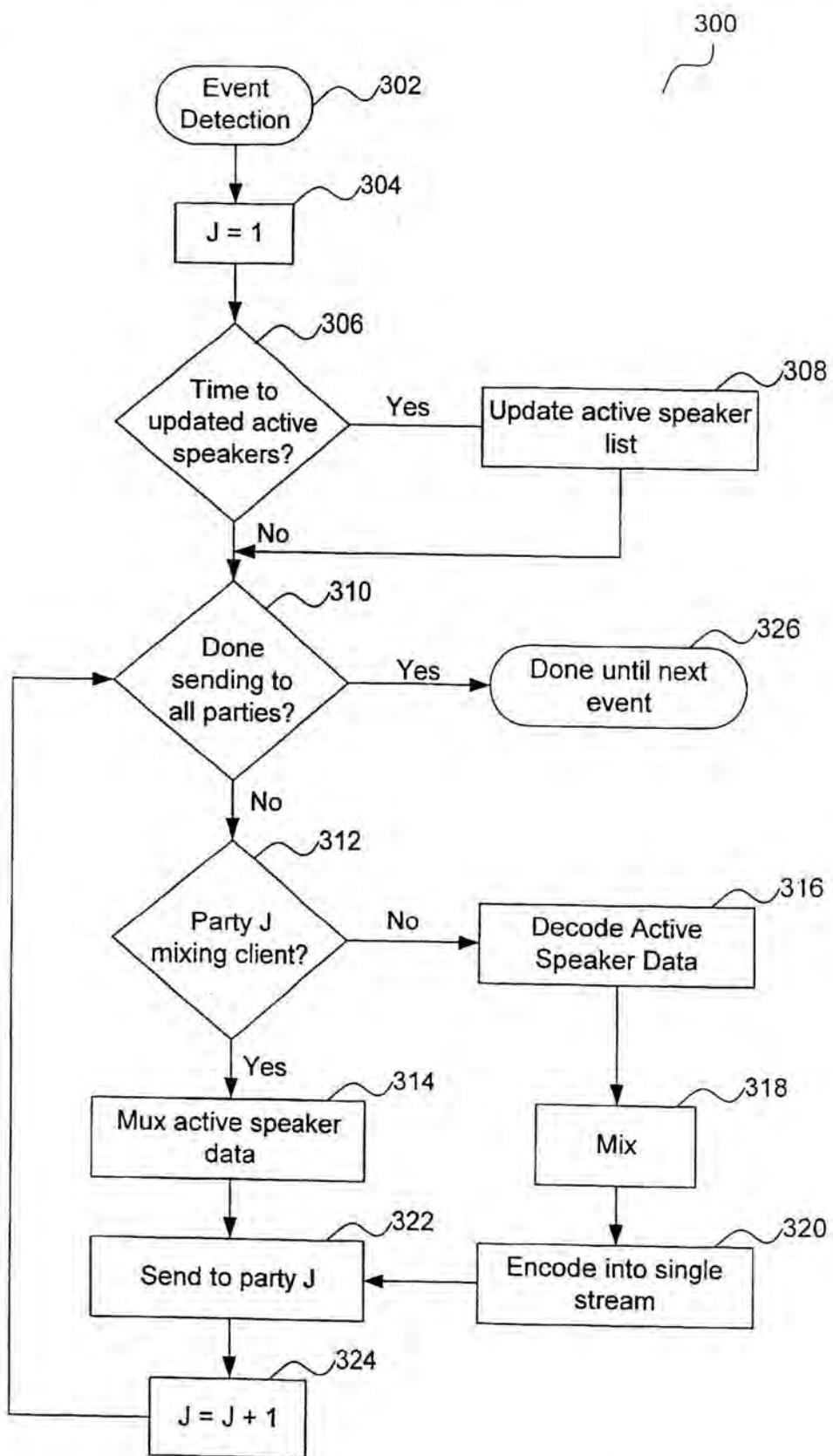


FIG. 3

U.S. Patent

Jan. 27, 2004

Sheet 4 of 4

US 6,683,858 B1

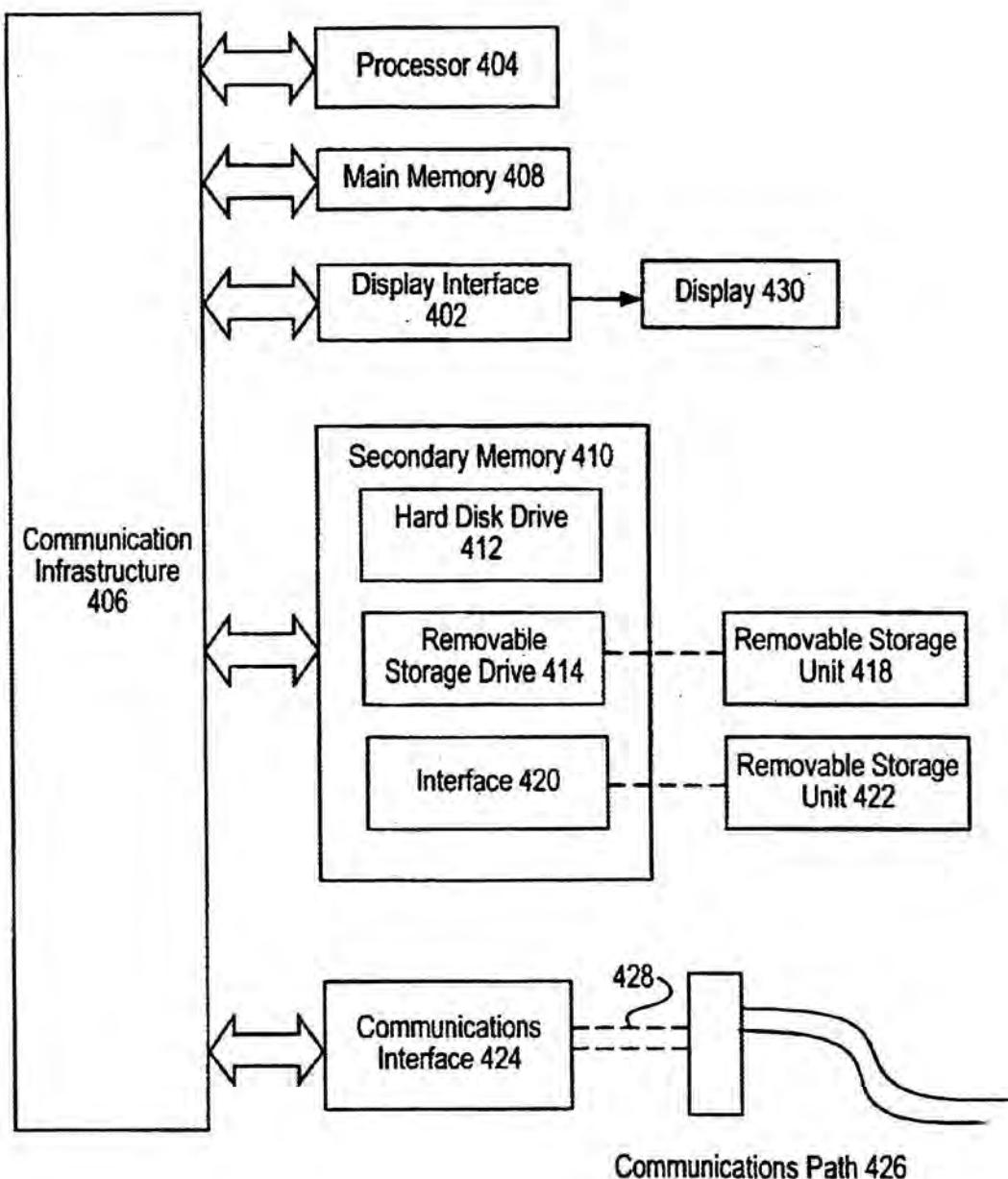
Computer System 400

FIG. 4

HYBRID SERVER ARCHITECTURE FOR MIXING AND NON-MIXING CLIENT CONFERENCING

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to computer-based telephony networks and more particularly to servers that manage telephony conferencing.

2. Related Art

In today's technological environment, there exists many ways for several people who are in multiple geographic locations to communicate with one another simultaneously. One such way is audio conferencing. Audio conferencing applications serve both the needs of business users (e.g., national sales force meeting) and leisure users (e.g., audio chat room participants) who are geographically distributed.

Traditional audio conferencing involved a central conferencing server which hosted an audio conference. Participants would use their telephones and dial in to the conferencing server over the Public Service Telephone Network (PSTN) (also called the Plain Old Telephone System (POTS)).

The availability of low-cost personal computers, networking equipment, telecommunications, and related technology, however, has dramatically changed the way people communicate. One example of such change is the explosion of people connected to the global (sometimes referred to as the "public") Internet.

The connectivity achieved by the Internet—connecting numerous, different types of networks—is based upon a common protocol suite utilized by those computers connecting to it. Part of the common protocol suite is the Internet Protocol (IP), defined in Internet Standard (STD) 5, Request for Comments (RFC) 791 (Internet Architecture Board). IP is a network-level, packet (i.e., a unit of transmitted data) switching protocol.

In recent years, the possibility of transmitting voice (i.e., audio) over the worldwide public Internet has been recognized. Voice over IP (VoIP) began with computer scientists experimenting with exchanging voice using personal computers (PCs) equipped with microphones, speakers, and sound cards.

VoIP further developed when, in March of 1996, the International Telecommunications Union-Telecommunications sector (ITU-T), a United Nations organization, adopted the H.323 Internet Telephony Standard. Among its specifications, H.323 specifies the minimum standards (e.g., call setup and control) that equipment must meet in order to send voice over the IP, and other packet-switched network protocols where quality of sound cannot be guaranteed. Thus, conferencing servers (also called multipoint control units (MCUs)) were developed to host audio conferences where participants connected to a central MCU using PC-based equipment and the Internet, rather than traditional phone equipment over the PSTN.

More recently, several alternatives to H.323 have been developed. One such alternative is the Session Initiation Protocol (SIP) developed within the Internet Engineering Task Force (IETF) Multiparty Multimedia Session Control (MMUSIC) Working Group. SIP, which is well-known in the relevant art(s), is a signaling protocol for Internet conferencing and telephony. SIP addresses users using an e-mail-like address and utilizes a portion of the infrastruc-

ture used for Internet e-mail delivery. SIP is more powerful than H.323 in providing call control and extended feature sets. It handles basic setup functions as well as enhanced services (e.g., call forwarding).

Given the rapid pace of development in the telephony industry—both in protocols and equipment—and the existence of legacy equipment and protocols (e.g., telephones and switching networks such as the PSTN), it is desirable for conferencing servers (or MCUs) to provide support for users of both new (i.e., packet-based) and legacy (i.e., switching-based) systems. Therefore, what is needed is a hybrid server architecture for mixing and non-mixing client conferencing. The hybrid server should realize the capabilities of the various participants' equipment (e.g., PC-based client versus phone-based clients) and provide the appropriate audio data to each participant.

SUMMARY OF THE INVENTION

The present invention is directed to a hybrid server architecture, that meets the above-identified needs, whereby mixing (e.g., PC-based clients) and non-mixing (e.g., phone) clients can simultaneously participate in a single audio conference application.

The system of the present invention includes a receiver capable of receiving audio packets from each client, means for determining and keeping a list of clients who are currently active speakers, and means for storing information (e.g., database, list, linked list, table, flag, or the like) indicative of whether each client has the capability to mix multiple audio streams.

The system also includes a multiplexor capable of multiplexing the packets of audio data received from each client on the list of active speakers into a multiplexed stream, and a mixer capable of mixing the packets of audio data received from each client on the list of active speakers into one combined packet.

The system further includes means for sending the multiplexed stream to each of the clients which have the capability to mix multiple audio streams, and the combined packet to each of the plurality of clients which do not have the capability to mix multiple audio streams.

The method and computer program product of the present invention include the steps of receiving audio packets from each client, determining which are active speakers and forming an active speakers list. Then, the clients are divided into two categories—those which have the capability to mix multiple audio streams and those which do not. For those clients which can mix, the server multiplexes the packets of audio data received from each client on the active speakers list into a multiplexed stream. For those clients which cannot mix, the server mixes the packets of audio data received from each client on the active speakers list into one combined packet.

The method and computer program product of the present invention then send the multiplexed stream to each of the clients that can mix, and send the combined packet to each of the clients that cannot mix. The method and computer program product of the present invention also perform an "echo suppression" during the sending of either the multiplexed stream or combined packet so that each client, if they are an active speaker, will not hear themselves speaking.

An advantage of the present invention is that a single server or multipoint control unit (MCU) can provide conferencing services to multiple clients that are using varying equipment and protocols.

Another advantage of the present invention is that servers or MCUs, by realizing the audio mixing capabilities of their

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clients, can distribute the computational burden of mixing audio streams of the active speakers.

Another advantage of the present invention is that by providing multiplexed packets to clients who are capable of mixing, better sound quality is achieved by reducing the effect of "transcoding artifacts."

Yet another advantage of the present invention is that by providing multiplexed packets to clients who are capable of mixing, servers or MCUs can be scaled to support more simultaneous conferences due to the efficiency gained by not having to mix for every client.

Further features and advantages of the invention as well as the structure and operation of various embodiments of the present invention are described in detail below with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE FIGURES

The features and advantages of the present invention will become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit of a reference number identifies the drawing in which the reference number first appears.

FIG. 1 is a block diagram illustrating the overall system architecture of an embodiment of the present invention, showing connectivity among the various components;

FIG. 2 is a block diagram illustrating the system architecture of a hybrid mixer according to an embodiment of the present invention;

FIG. 3 is a flowchart representing the general operational flow according to an embodiment of the present invention; and

FIG. 4 is a block diagram of an example computer system for implementing the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

I. System Architecture Overview

This present invention is directed to a hybrid server architecture for mixing (e.g., mixing capable PC clients connected via Internet Protocol (IP)) and non-mixing (e.g., phone) client conferencing. In a preferred embodiment of the present invention, a service provider supplies the infrastructure (i.e., a hybrid conferencing server or multi-point control unit (MCU)), agreement terms, and facilities so that clients (i.e., participants) who subscribe to their conferencing services can take part in a multi-party audio conference application. The service provider would also provide customer service, support, and billing as will be apparent to one skilled in the relevant art(s) after reading the description herein. The clients would connect to the hybrid server using whatever equipment and protocol they currently have access to.

Referring to FIG. 1, a block diagram illustrating the system architecture of an embodiment of the present invention, showing connectivity among the various components, is shown. More specifically, FIG. 1 illustrates a hybrid network architecture 100 for IP-based client and phone client conferencing. Architecture 100 includes a plurality of PC-based clients 102 (shown as clients 102a-102n) which connect to a wide area network (e.g., the public Internet) 104. The wide area network 104 is connected to the service provider's facilities through a router 106 and a switch 114 which is capable of routing IP packets.

Architecture 100 also includes a plurality of telephone-based clients 108 (shown as clients 108a-108n) which

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connect to the PSTN 110 (i.e., circuit-switched network). The PSTN 110 is connected to the service provider's facilities (i.e., server 116) through a gateway 112 and the switch 114.

- 5 Connected to the switch 114, is the service provider's server or multipoint control unit (MCU) 116, which includes a mixer 118. The switch 114 enables the service provider's MCU 116 to receive audio packets from both PC-based clients 102 using, for example, the SIP protocol, as well as 10 receive H.323 protocol packets from the telephone-based clients 108 who connect via gateway 112.

The present invention is described in terms of the above example. This is for convenience only and is not intended to limit the application of the present invention. In fact, after 15 reading the following description, it will be apparent to one skilled in the relevant art(s) how to implement the following invention in alternative embodiments (e.g., server 116 handling protocols and equipment other than those illustrated herein). Further, while FIG. 1 illustrates mixer 118 as part of 20 MCU 116, those skilled in the relevant art(s) will appreciate that mixer 118 can, in an alternate embodiment, be separated from, and coupled to, MCU 116.

The terms "client," "subscriber," "party," "participant," and the plural form of these terms may be used interchangeably throughout herein to refer to those who would access, 25 use, and/or benefit from the hybrid server of the present invention.

II. Mixer Architecture

Referring to FIG. 2, a block diagram illustrating the 30 system architecture of a hybrid mixer 118 according to an embodiment of the present invention is shown. More specifically, the architecture of mixer 118 which allows the service provider to supply a hybrid network architecture 100 for IP-based client and phone client conferencing is now 35 described in more detail.

Mixer 118 includes buffers 202 which receive audio packets from the clients 102 and 108 via switch 114. (See FIG. 1.) Mixer 118 also includes a packet retriever 206 which is coupled to buffers 202. The connection between buffers 202 and packet retriever 206, however, is only complete when a switch 204 is closed. Switch 204 is an event driven switch which can be timer driven. An event can be generated on a pre-determined time schedule (e.g., every 0.5 to 1.0 second). In an alternative embodiment, events may 45 be buffer size driven. That is, an event may be generated every time buffers 202 receive a pre-determined number of audio data packets (e.g., 90 milliseconds of audio data for each speaker).

Mixer 118 also includes a packet mixer/multiplexor ("mix/mux") 208. The mix/mux 208 forms multiplexed audio packets to be sent to clients capable of mixing multiple audio streams (e.g., clients 102) and also forms mixed audio streams to be sent to non-mixing clients (e.g., clients 108 which have no capability to mix multiple audio streams).

Mixer 118 also includes a packet sender 210 which forwards the packets created by mix/mux 208 to clients 102 and 108.

III. System Operation

Referring to FIG. 3, a flowchart representing the general operational flow, according to an embodiment of the present 60 invention, is shown. More specifically, FIG. 3 depicts an example control flow 300 involved in providing a hybrid IP-based client and phone client audio conference. Control flow 300 begins at step 302. In step 302, an event is detected by the mixer 118 causing switch 204 to close. As mentioned 65 above, such an event can be timer driven, where an event is generated on a pre-determined time schedule. In an alternative embodiment, events may be buffer size driven. That is,

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an event may be generated every time buffers 202 receive a pre-determined number of audio data packets from each speaker.

Upon detecting an event, control flow 300 proceeds to step 304. In step 304, a counter j is set to one. (Assume there are N clients currently participating in an audio conference application.) In step 306, control flow 300 determines whether the active speaker list needs to be updated. In an embodiment, the active speaker list is updated on a pre-determined time schedule which is independent of the event time schedule in step 302.

If the determination of step 306 is true, the list of active speakers is updated in step 308. The list of active speakers may be updated, in one embodiment, by comparing the average energy values of each participant's audio data. As will be apparent to one skilled in the relevant art(s), if a conference has N participants, the sever will only allow a certain number of speakers k to be considered "active" (i.e., those participants who are actually speaking rather than simply listening). (Where, for example, k=3<<N.) This is because if the number of active speakers is too large, the data being sent by the server to every participant in the audio conference will be unintelligible (i.e., too many participants speaking on top of each other).

In step 310, control flow 300 determines whether all the parties have been sent an updated audio stream during the current event detected in step 302. That is, the determination of step 310 is whether j is equal to N. If not, in step 312, control flow 300 determines whether party j is a mixing client. Whether a particular party is a mixing client (e.g., a PC-based client 102 using SIP) or not (e.g., a telephone client 108 using H.323) is static state information which, in one embodiment, may be stored on the MCU 116 upon each client's connection to the audio conference. Such information storage can be in the form of a database, internal memory such as a list, linked list, table, or flag or the like.

Further, the determination of each client's mixing capability can be facilitated, in one embodiment, by the service provider inserting proprietary code into the audio stream or control stream received from its subscribers (i.e., clients 102 or 108). In an alternate embodiment, such mixing capability information may already be present in the audio stream received from subscribers as newer telephony protocols are developed by the IETF and the like.

In step 314, control flow 300 multiplexes (by employing mix/mux 208) the audio stream data (stored on retriever 206) for all k active speakers. In step 314, active speaker audio data for each and every active speaker is multiplexed. However, as will be apparent to those skilled in the relevant art(s), if party j is an active speaker, step 314 will not include party j's own audio data in the multiplexed packets. This is, in essence, an echo suppression function so that party j will not "hear themselves speak."

If step 312 determines that party j is non-mixing client, then step 316 decodes all the active speaker audio data into raw uncompressed data. As in step 314, step 316 will decode all active speaker audio data for each and every active speaker. However, as will be apparent to those skilled in the relevant art(s), if party j is an active speaker, step 316 will not include party j's own audio data in the decoded data. This is, in essence, an echo suppression function so that party j will not "hear themselves speak." Then, the active speaker data is mixed in step 318 and encoded into a single stream in step 320. For example, if there are two (i.e., k=2) active speakers, step 320 will encode two 90 ms raw frames of data and encode them into a single 90 ms frame of data.

Then, in step 322, control flow 300 either sends the multiplexed audio packet (created in step 314) to a mixing

client or a mixed audio stream (created in step 320) to a non-mixing client. In step 324, the counter j is incremented so that the next client can receive updated audio data during the current event detected in step 302. As will be appreciated by one skilled in the relevant art(s) and indicated by step 326, steps 310-324 loop until all participants (i.e., j=N) have been sent an updated audio stream during the current event detected in step 302. Thus, control flow 300 would continue until the server ceases to host the audio conference (i.e., the conference is over and terminated).

IV. Environment

The present invention (i.e., architecture 100, control flow 300, or any part thereof) may be implemented using hardware, software or a combination thereof and may be implemented in one or more computer systems or other processing systems. In fact, in one embodiment, the invention is directed toward one or more computer systems capable of carrying out the functionality described herein.

An example of a computer system 400 is shown in FIG. 4. The computer system 400 represents any single or multi-processor computer. The computer system 400 includes one or more processors, such as processor 404. The processor 404 is connected to a communication infrastructure 406 (e.g., a communications bus, cross-over bar, or network). Various software embodiments are described in terms of this exemplary computer system. After reading this description, it will become apparent to a person skilled in the relevant art how to implement the invention using other computer systems and/or computer architectures.

Computer system 400 can include a display interface 405 that forwards graphics, text, and other data from the communication infrastructure 402 (or from a frame buffer not shown) for display on the display unit 430.

Computer system 400 also includes a main memory 408, preferably random access memory (RAM), and may also include a secondary memory 410. The secondary memory 410 may include, for example, a hard disk drive 412 and/or a removable storage drive 414, representing a floppy disk drive, a magnetic tape drive, an optical disk drive, etc. The removable storage drive 414 reads from and/or writes to a removable storage unit 418 in a well-known manner. Removable storage unit 418, represents a floppy disk, magnetic tape, optical disk, etc. which is read by and written to by removable storage drive 414. As will be appreciated, the removable storage unit 418 includes a computer usable storage medium having stored therein computer software and/or data.

In alternative embodiments, secondary memory 410 may include other similar means for allowing computer programs or other instructions to be loaded into computer system 400. Such means may include, for example, a removable storage unit 422 and an interface 420. Examples of such may include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an EPROM, or PROM) and associated socket, and other removable storage units 422 and interfaces 420 which allow software and data to be transferred from the removable storage unit 422 to computer system 400.

Computer system 400 may also include a communications interface 424. Communications interface 424 allows software and data to be transferred between computer system 400 and external devices. Examples of communications interface 424 may include a modem, a network interface (such as an Ethernet card), a communications port, a PCMCIA slot and card, etc. Software and data transferred via communications interface 424 are in the form of signals 428 which may be electronic, electromagnetic, optical or other

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signals capable of being received by communications interface 424. These signals 428 are provided to communications interface 424 via a communications path (i.e., channel) 426. This channel 426 carries signals 428 and may be implemented using wire or cable, fiber optics, a phone line, a cellular phone link, an RF link and other communications channels.

In this document, the terms "computer program medium" and "computer usable medium" are used to generally refer to media such as removable storage drive 414, a hard disk installed in hard disk drive 412, and signals 428. These computer program products are means for providing software to computer system 400. The invention is directed to such computer program products.

Computer programs (also called computer control logic) are stored in main memory 408 and/or secondary memory 410. Computer programs may also be received via communications interface 424. Such computer programs, when executed, enable the computer system 400 to perform the features of the present invention as discussed herein. In particular, the computer programs, when executed, enable the processor 404 to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system 400.

In an embodiment where the invention is implemented using software, the software may be stored in a computer program product and loaded into computer system 400 using removable storage drive 414, hard drive 412 or communications interface 424. The control logic (software), when executed by the processor 404, causes the processor 404 to perform the functions of the invention as described herein.

In another embodiment, the invention is implemented primarily in hardware using, for example, hardware components such as application specific integrated circuits (ASICs). Implementation of the hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s).

In yet another embodiment, the invention is implemented using a combination of both hardware and software.

V. Conclusion

While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example, and not limitation. For example, the operational flow presented in FIG. 3, is for example purposes only and the present invention is sufficiently flexible and configurable such that it may flow in ways other than that shown.

Further, it will be apparent to persons skilled in the relevant art that various changes in form and detail can be made therein without departing from the spirit and scope of the invention. Thus the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

What is claimed is:

1. A method of providing audio conferencing for a plurality of clients using varying equipment and protocols, comprising the steps of:

(1) receiving an audio packet from each of the plurality of clients;

(2) determining which of the plurality of clients is an active speaker and forming an active speakers list;

(3) determining that a first subset of the plurality of clients has the capability to mix multiple audio streams;

(4) determining that a second subset of the plurality of clients does not have the capability to mix multiple audio streams;

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(5) multiplexing said packets of audio data received from each client on said active speakers list into a multiplexed stream;

(6) sending said multiplexed stream to each of said first subset of the plurality of clients;

(7) mixing said packets of audio data received from each client on said active speakers list into one combined packet; and

(8) sending said combined packet to each of said second subset of the plurality of clients;

whereby said plurality of clients can simultaneously participate in a single audio conference application.

2. The method of claim 1, further comprising the step of: before sending said multiplexed stream to one of said first subset of the plurality of clients, removing from said multiplexed stream said packets of audio data received from said one of said first subset of the plurality of clients when said one of said first subset of the plurality of clients is on said active speakers list.

3. The method of claim 1, further comprising the step of: before sending said combined packet to one of said second subset of the plurality of clients, removing from said combined packet said packets of audio data received from said one of said second subset of the plurality of clients when said one of said second subset of the plurality of clients is on said active speakers list.

4. The method of claim 1, wherein at least one of said first subset of the plurality of clients is using PC-based equipment and the Session Initiation Protocol (SIP).

5. The method of claim 1, wherein at least one of said second subset of the plurality of clients is using a telephone and the H.323 protocol.

6. A system for providing audio conferencing for a plurality of clients, comprising:

a receiver capable of receiving an audio packet from each of the plurality of clients;

means for maintaining a list of each of the plurality of clients that is an active speaker;

means for storing information indicative of whether each of the plurality of clients has the capability to mix multiple audio streams;

a multiplexor capable of multiplexing said packets of audio data received from each client on said list of active speakers into a multiplexed stream;

a mixer capable of mixing said packets of audio data received from each client on said list of active speakers into one combined packet; and

a packet sender capable of sending, based on information in said means for storing, said multiplexed stream to each of the plurality of clients which have the capability to mix multiple audio streams, and capable of sending said combined packet to each of the plurality of clients which do not have the capability to mix multiple audio streams;

whereby the plurality of clients can simultaneously participate in a single audio conference application.

7. The system of claim 6, further comprising:

means for removing, before said packet sender sends said multiplexed stream to one of the plurality of clients which have the capability to mix multiple audio streams, from said multiplexed stream said packets of audio data received from said one of the plurality of clients, when said one of the plurality of clients is on said list of active speakers.

8. The system of claim 6, further comprising:

means for removing, before said packet sender sends said combined packet to one of the plurality of clients which do not have the capability to mix multiple audio streams, from said combined packet said packets of audio data received from said one of the plurality of clients, when said one of the plurality of clients is on said list of active speakers.

9. The system of claim 6, wherein at least one of the plurality of clients, which has the capability to mix multiple audio streams, is using PC-based equipment and the Session Initiation Protocol (SIP).

10. The system of claim 6, wherein at least one of the plurality of clients, which does not have the capability to mix multiple audio streams, is using a telephone and the H.323 protocol.

11. A computer program product comprising a computer usable medium having control logic stored therein for causing a computer to provide audio conferencing for a plurality of clients using varying equipment and protocols, said control logic comprising:

first computer readable program code means for causing the computer to receive an audio packet from each of the plurality of clients;

second computer readable program code means for causing the computer to determine which of the plurality of clients is an active speaker and forming an active speakers list;

third computer readable program code means for causing the computer to determine that a first subset of the plurality of clients has the capability to mix multiple audio streams;

fourth computer readable program code means for causing the computer to determine that a second subset of the plurality of clients does not have the capability to mix multiple audio streams;

fifth computer readable program code means for causing the computer to multiplex said packets of audio data received from each client on said active speakers list into a multiplexed stream;

sixth computer readable program code means for causing the computer to send said multiplexed stream to each of said first subset of the plurality of clients;

seventh computer readable program code means for causing the computer to mix said packets of audio data received from each client on said active speakers list into one combined packet; and

eighth computer readable program code means for causing the computer to send said combined packet to each of said second subset of the plurality of clients; whereby the plurality of clients can simultaneously participate in a single audio conference application.

12. The computer program product of claim 11, further comprising:

ninth computer readable program code means for causing the computer, before sending said multiplexed stream to one of said first subset of the plurality of clients, to remove from said multiplexed stream said packets of audio data received from said one of said first subset of the plurality of clients when said one of said first subset of the plurality of clients is on said active speakers list.

13. The computer program product of claim 11, further comprising:

ninth computer readable program code means for causing the computer, before sending said combined packet to one of said second subset of the plurality of clients, to remove from said combined packet said packets of audio data received from said one of said second subset of the plurality of clients when said one of said second subset of the plurality of clients is on said active speakers list.

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ISSUE SLIP STAPLE ARFA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION			07/07/07
O.I.P.E. CLASSIFIER	RED		7/4/07
FORMALITY REVIEW	SJ	71531	7-19-07
RESPONSE FORMALITY REVIEW		7423	12-22-07

INDEX OF CLAIMS

✓	Rejected	N	Non-elected
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—	(Through numeral)... Canceled	A	Appeal
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Class	Sub.	Date	Exmr.
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	352-		
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379	158		
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**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

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Text Search	9/15/03	BP

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
370	260	9/15/03	BP
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PATENT APPLICATION



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CONTENTS

Date Received
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1. Application 4 PTO papers.
2. Re: Dec. fees

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3. PTA

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4. PTA

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5. PTA

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6. Accept Notice

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7. Noticing Allowability

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8. Notice of Allowability

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6/3/13 9. Power of Attorney 5/28/13

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39. **RECORDS MANAGEMENT**

40. **R HALF**

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